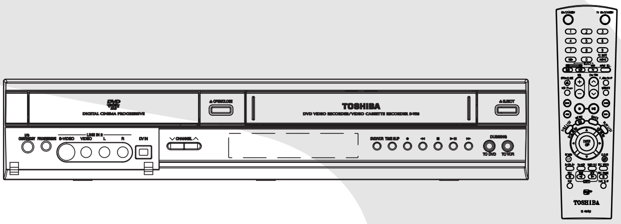
TOSHIBA

FILE NO. 810-200434

SERVICE MANUAL

DVD VIDEO RECORDER/ VIDEO CASSETTE RECORDER

D-VR3SU
D-VR3SC
D-VKR3SU



DOCUMENT CREATED IN JAPAN, Oct., 2004

CONTENTS

1. Precautions
2. Reference Information
3. Product Specification
4. Operating Instructions
5. Disassembly and Reassembly
6. Alignment and Adjustments
7. Circuit Operating Descriptions
8. VCR Deck Operating Descriptions
9. Troubleshooting
10. Exploded View and Parts List
11. Electrical Parts List
12. Block Diagram
13. Wiring Diagram
14. PCB Diagrams
15. Schematic Diagrams

1. Precautions

1-1 Safety Precautions

1) Before returning an instrument to the customer, always make a safety check of the entire instrument, including, but not limited to, the following items:

(1) Be sure that no built-in protective devices are defective or have been defeated during servicing. (1)Protective shields are provided to protect both the technician and the customer. Correctly replace all missing protective shields, including any removed for servicing convenience.
(2)When reinstalling the chassis and/or other assembly in the cabinet, be sure to put back in place all protective devices, including, but not limited to, nonmetallic control knobs, insulating fish papers, adjustment and compartment covers/shields, and isolation resistor/capacitor networks. Do not operate this instrument or permit it to be operated without all protective devices correctly installed and functioning.

(2) Be sure that there are no cabinet openings through which adults or children might be able to insert their fingers and contact a hazardous voltage. Such openings include, but are not limited to, excessively wide cabinet ventilation slots, and an improperly fitted and/or incorrectly secured cabinet back cover.

(3) Leakage Current Hot Check-With the instrument completely reassembled, plug the AC line cord directly into a 120V AC outlet. (Do not use an isolation transformer during this test.) Use a leakage current tester or a metering system that complies with American National Standards institute (ANSI) C101.1 Leakage Current for Appliances and Underwriters Laboratories (UL) 1270 (40.7). With the instrument's AC switch first in the ON position and then in the OFF position, measure from a known earth ground (metal water pipe, conduit, etc.) to all exposed metal parts of the instrument (antennas, handle brackets, metal cabinets, screwheads, metallic overlays, control shafts, etc.), especially any exposed metal parts that offer an electrical return path to the chassis.
Any current measured must not exceed 0.5mA. Reverse the instrument power cord plug in the outlet and repeat the test. See Fig. 1-1.

Any measurements not within the limits specified herein indicate a potential shock hazard that must be eliminated before returning the instrument to the customer.

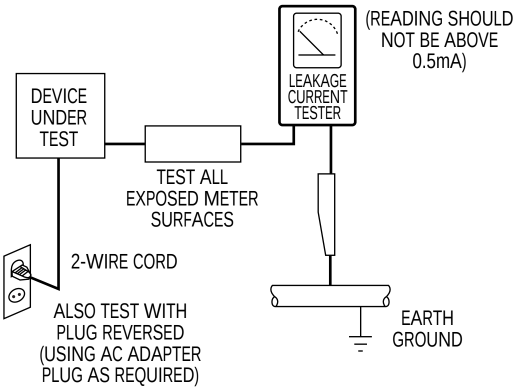

(READING SHOULD NOT BE ABOVE 0.5mA)
LEAKAGE CURRENT TESTER
DEVICE UNDER TEST
TEST ALL EXPOSED METER SURFACES
2-WIRE CORD
ALSO TEST WITH PLUG REVERSED (USING AC ADAPTER PLUG AS REQUIRED)
EARTH GROUND

Fig. 1-1 AC Leakage Test

(4) Insulation Resistance Test Cold Check-(1) Unplug the power supply cord and connect a jumper wire between the two prongs of the plug. (2) Turn on the power switch of the instrument. (3) Measure the resistance with an ohmmeter between the jumpered AC plug and all exposed metallic cabinet parts on the instrument, such as screwheads, antenna, control shafts, handle brackets, etc. When an exposed metallic part has a return path to the chassis, the reading should be between 1 and 5.2 megohm. When there is no return path to the chassis, the reading must be infinite. If the reading is not within the limits specified, there is the possibility of a shock hazard, and the instrument must be repaired and rechecked before it is returned to the customer. See Fig. 1-2.

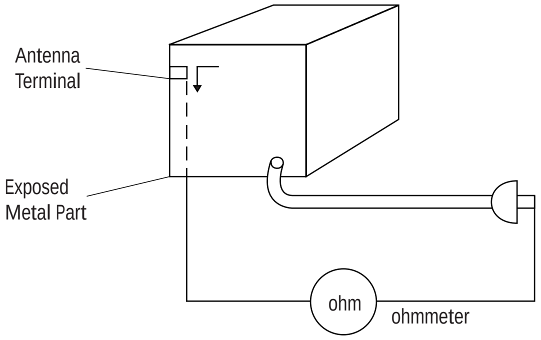


Fig. 1-2 Insulation Resistance Test

2) Read and comply with all caution and safety related notes on or inside the cabinet, or on the chassis.

3) Design Alteration Warning-Do not alter or add to the mechanical or electrical design of this instrument. Design alterations and additions, including but not limited to, circuit modifications and the addition of items such as auxiliary audio output connections, might alter the safety characteristics of this instrument and create a hazard to the user. Any design alterations or additions will make you, the servicer, responsible for personal injury or property damage resulting therefrom.

4) Observe original lead dress. Take extra care to assure correct lead dress in the following areas:
(1) near sharp edges, (2) near thermally hot parts (be sure that leads and components do not touch thermally hot parts), (3) the AC supply, (4) high voltage, and (5) antenna wiring. Always inspect in all areas for pinched, out-of-place, or frayed wiring, Do not change spacing between a component and the printed-circuit board. Check the AC power cord for damage.

5) Components, parts, and/or wiring that appear to have overheated or that are otherwise damaged should be replaced with components, parts and/ or wiring that meet original specifications.
Additionally, determine the cause of overheating and/or damage and, if necessary, take corrective action to remove any potential safety hazard.

6) Product Safety Notice-Some electrical and mechanical parts have special safety-related characteristics which are often not evident from visual inspection, nor can the protection they give necessarily be obtained by replacing them with components rated for higher voltage, wattage, etc. Parts that have special safety characteristics are identified by shading, an (⚠)or a (⚠)on schematics and parts lists. Use of a substitute replacement that does not have the same safety characteristics as the recommended replacement part might create shock, fire and/or other hazards. Product safety is under review continuously and new instructions are issued whenever appropriate.

1-2 Servicing Precautions

CAUTION : Before servicing units covered by this service manual and its supplements, read and follow the Safety Precautions section of this manual.

Note : If unforseen circumstances create conflict between the following servicing precautions and any of the safety precautions, always follow the safety precautions. Remember: Safety First.

1-2-1 General Servicing Precautions

(1) a. Always unplug the instrument's AC power cord from the AC power source before (1) re-moving or reinstalling any component, circuit board, module or any other instrument assembly, (2) disconnecting any instrument electrical plug or other electrical connection, (3) connecting a test substitute in parallel with an electrolytic capacitor in the instrument.

b. Do not defeat any plug / socket B+ voltage interlocks with which instruments covered by this service manual might be equipped.

c. Do not apply AC power to this instrument and / or any of its electrical assemblies unless all solid-state device heat sinks are correctly installed.

d. Always connect a test instrument's ground lead to the instrument chassis ground before connecting the test instrument positive lead. Always remove the test instrument ground lead last.

Note : Refer to the Safety Precautions section ground lead last.

(2) The service precautions are indicated or printed on the cabinet, chassis or components. When servicing, follow the printed or indicated service precautions and service materials.

(3) The components used in the unit have a specified flame resistance and dielectric strength.
When replacing components, use components which have the same ratings. Components identified by shading, by(⚡) or by (⚠) in the circuit diagram are important for safety or for the characteristics of the unit. Always replace them with the exact replacement components.

(4) An insulation tube or tape is sometimes used and some components are raised above the printed wiring board for safety. The internal wiring is sometimes clamped to prevent contact with heating components. Install such elements as they were.

(5) After servicing, always check that the removed screws, components, and wiring have been installed correctly and that the portion around the serviced part has not been damaged and so on. Further, check the insulation between the blades of the attachment plug and accessible conductive parts.

1-2-2 Insulation Checking Procedure

Disconnect the attachment plug from the AC outlet and turn the power ON. Connect the insulation resistance meter (500V) to the blades of the attachment plug. The insulation resistance between each blade of the attachment plug and accessible conductive parts(see note) should be more than 1 Megohm.

Note : Accessible conductive parts include metal panels, input terminals, earphone jacks, etc.

1-3 ESD Precautions

Electrostatically Sensitive Devices (ESD)

Some semiconductor (solid state) devices can be damaged easily by static electricity.
Such components commonly are called Electrostatically Sensitive Devices(ESD). Examples of typical ESD devices are integrated circuits and some field-effect transistors and semiconductor chip components. The following techniques should be used to help reduce the incidence of component damage caused by static electricity.

(1) Immediately before handling any semiconductor component or semiconductor-equipped assembly, drain off any electrostatic charge on your body by touching a known earth ground. Alternatively, obtain and wear a commercially available discharging wrist strap device, which should be removed for potential shock reasons prior to applying power to the unit under test.

(2) After removing an electrical assembly equipped with ESD devices, place the assembly on a conductive surface such as aluminum foil, to prevent electrostatic charge buildup or exposure of the assembly.

(3) Use only a grounded-tip soldering iron to solder or unsolder ESD devices.

(4) Use only an anti-static solder removal devices. Some solder removal devices not classified as "anti-static" can generate electrical charges sufficient to damage ESD devices.

(5) Do not use freon-propelled chemicals. These can generate electrical charges sufficient to damage ESD devices.

(6) Do not remove a replacement ESD device from its protective package until immediately before your are ready to install it.(Most replacement ESD devices are packaged with leads electrically shorted together by conductive foam, aluminum foil or comparable conductive materials).

(7) Immediately before removing the protective materials from the leads of a replacement ESD device, touch the protective material to the chassis or circuit assembly into which the device will be installed.

CAUTION : Be sure no power is applied to the chassis or circuit, and observe all other safety precautions.

(8) Minimize bodily motions when handling unpackaged replacement ESD devices. (Otherwise harmless motion such as the brushing together of your clothes fabric or the lifting of your foot from a carpeted floor can generate static electricity sufficient to damage an ESD device).

1-4 Handling the optical pick-up

The laser diode in the optical pick up may suffer electrostatic breakdown because of potential static electricity from clothing and your body.

The following method is recommended.

(1) Place a conductive sheet on the work bench (The black sheet used for wrapping repair parts.)

(2) Place the set on the conductive sheet so that the chassis is grounded to the sheet.

(3) Place your hands on the conductive sheet(This gives them the same ground as the sheet.)

(4) Remove the optical pick up block

(5) Perform work on top of the conductive sheet. Be careful not to let your clothes or any other static sources to touch the unit.

◆ Be sure to put on a wrist strap grounded to the sheet.

◆ Be sure to lay a conductive sheet made of copper etc. Which is grounded to the table.

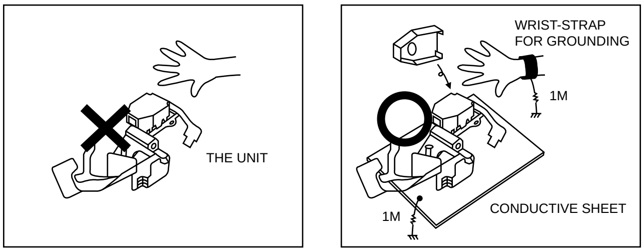


Fig.1-3

(6) Short the short terminal on the PCB, which is inside the Pick-Up ASS'Y, before replacing the Pick-Up. (The short terminal is shorted when the Pick-Up Ass'y is being lifted or moved.)

(7) After replacing the Pick-up, open the short terminal on the PCB.

2. Reference Information

2-1 Introduction to DVD

2-1-1 The Definition of DVD

DVD is the next generation medium and is the acronym of the Digital Versatile Disc or thr Digital Video Disc, which maximizes the saving density of the disk surface using the MPEG-2 compression technology to enable the storage of 17G bytes of data on the same size CD.

1) 7 times the storage capacity of the conventional CD

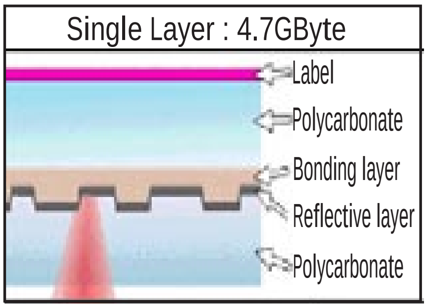
- Minimized the track pitch and pit size to 1/2 of conventional CD.
- Uses red laser with short-wavelenght of 650nm (635nm).

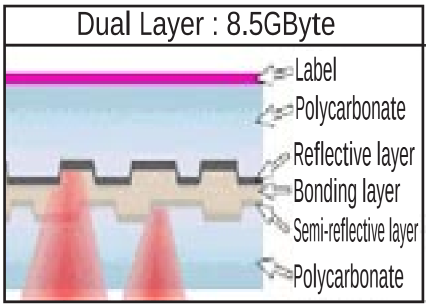
• DVD Vs. CD-ROM

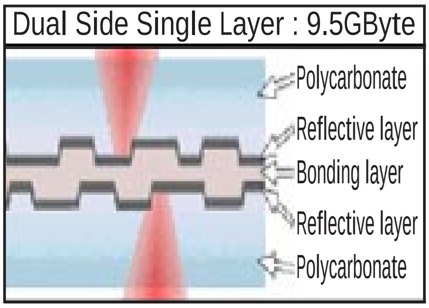
	CD-ROM	CD-R/RW	DVD-ROM	DVD-R/RW	DVD-RAM
Disc Thickness	1.2mm	1.2mm	0.6*2mm	0.6*2mm	0.6*2mm
Lens NA	0.45	0.45(0.5)	0.6	0.6	0.6
Laser wavelenght	780um	780um	650um	650um	650um
Track pitch	1.6pm	1.6pm	0.74pm	0.74pm	0.615pm
Capacity	0.65GB	0.65GB	4.7GB	4.7GB	4.7GB
Track structure	Pit train	Groove	Pit train	Groove	Land/Groove

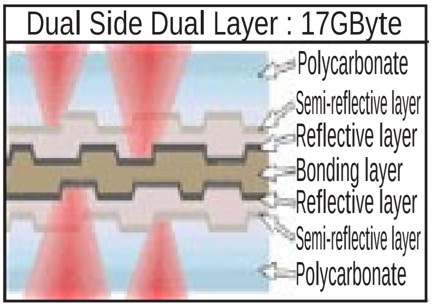
2) Disc Formats

DVD consists of two 0.6mm discs attached together, enabling access to the upper and lower side of the disk, and 4 sides could be used at maximum.


Single Layer : 4.7GByte
Label
Polycarbonate
Bonding layer
Reflective layer
Polycarbonate


Dual Layer : 8.5GByte
Label
Polycarbonate
Reflective layer
Bonding layer
Semi-reflective layer
Polycarbonate


Dual Side Single Layer : 9.5GByte
Polycarbonate
Reflective layer
Bonding layer
Reflective layer
Polycarbonate


Dual Side Dual Layer : 17GByte
Polycarbonate
Semi-reflective layer
Reflective layer
Bonding layer
Reflective layer
Semi-reflective layer
Polycarbonate

2-1-2 DVD Types

FORMAT	TYPE	APPLICATIONS
DVD-Video	Playback Only	High quality image and sound for movies and other video media.
DVD-ROM	Read Only	Multi-functional, multi-midia software that requires large storage capacity.
DVD-Audio	Playback Only	High quality sound that exceeds the CD, multi-channel Audio.
DVD-R	1 Time Recording	As with CD-R, write only once
DVD-RAM	Rewritable (more than 100,000times)	This can be virtually used as hard-disk, with a random read-write acess
DVD-RW	Rewritable (About 1000times)	Similar to DVD-RAM exiept than its technology features a sepueutial read-write access more like phonograph than a hord disk.

2-2 DVD-Video Fromat

2-2-1 Main Features

1) Able to store up to 160 minutes of Movie by utilizing the MPEG-2 compression technology. (Aver. 133min.)

2) Enables more than 500 lines of horizontal resolution. (Class corresponding to the Master Tapes used in broadcasting stations)

3) Provides Dolby Digital 5.1ch Surround 3D sound, which enables theater quality sound (NTSC area).
- For PAL areas, 1 of either MPEG-2 Audio or Dolby Digital must be selected.

4) Multi-Language
- Able to store up to 8 languages of dubbing.
- Able to store up to 32 subtitle languages.

5) Milti-Aspect Ratio
3TV Mode alternatives ; 16:9 Wide Screen (DVD Basic) / 4:3 Pan & Scan / Letter Box.

6) Multi-Story
Possible to implement Interactive Viewing which enables the user to select the scenario.

7) Multi-Angle
Able to view the camera angle you selected among the scenes recorded with multiple camera angles.

Note ; The above media features must have the DVD Title that contains the appropriate contents to function properly.

2-2-2 Audio & Video Specifications

Classification		DVD-Video		Video-CD	LD
VIDEO	Compression	MPEG-2		MPEG-1	Analog
	Pixel	720 x 480		352 x 240	
	Horizontal resolution	Max. 500 Lines		Max. 250 Lines	Max.420 Lines
	Compression rate	1/40		1/140	Analog
	Transmission speed	Max. 9.8Mbps (variable)		1.15Mbps (fixed)	
	TV aspect	16:9 / 4:3		4:3	4:3
AUDIO	Audio	Max. 8 streams		2CH stereo	2 Analog CH. 2 Digital CH. (16Bit/44.1KHz)
	Recording type	Dolby Digital	Linear PCM	MPEG-1 Layer 2	
	Transmission rate	448Kbps/stream	6.144Mbps/stream	224Kbps	or
	Channel	5.1CH/stream	8CH/stream	2CH	1 Analog CH. 1 Stream of Dolby Digital 2 Digital CH. (16Bit/44.1KHz)
	Sampling frequency	48KHz	16, 20, 24Bit/48, 96KHz	16Bit/44.1KHz	

2-2-3 Detailed Feature

DVD-Video Feature 1

When Developing the DVD Software, various addition and modification is possible.

As the storage capacity increases, the DVD-Video separates the main data and the additional data such as the Multi-Function into different data areas, enabling the control of time-data ratio to provide the format that enables the flexible Software development

- 1 Movie (3.5Mbps)
  + Subtitle (1 Language)
  + Surround Audio (1 Language)
  = 160min storage (4.673Gbytes)

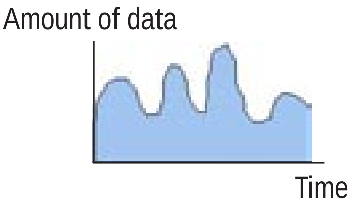
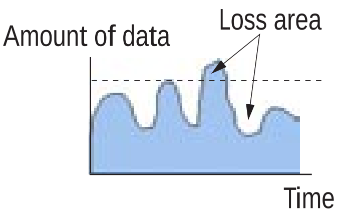
- 1 Movie (3.5Mbps)
  + Subtitle (4 Language)
  + Surround Audio (4 Language)
  = 160min storage (4.680Gbytes)

- 1 Music Video (4Mbps)
  + 2ch High quality Audio (96kHz/24bit)
  = 72min storage (4.648Gbytes)

DVD-Video Feature 2

Application of the MPEG-2 compression technology.

DVD-Video uses the variable compresion technology, the MPEG-2 to compress the moving image optimally, minimizing the Data loss to Provide a clear, natural screen while increasing the storage time.

DVD-Video	• MPEG-2 (Variable compression : Max. 1/40) • Field unit compression. • Compression rate change according to the amount of Data. • Differentiates the still image anf the moving image compression rete, reducing Data loss and enables efficient compression.	
Video-CD	• MPEG-1 (Fixed compression : Max. 1/140) • Frame unit compression. • Compresses all data using the same ratio. - Fast movements are jagged, and unnatural	

DVD-Video Feature 3

High quality surround audio.

DVD-Video can store the audio using the 5.1ch Dolby Digital compression or the advanced Liner PCM method, providing the better-than-CD quality and theater like audio quality.

- Dolby Digital (AC-3)
  - Unlike the traditional Dolby pro-Logic method, the Dolby Digital method separates all 5 main channels (Front L / R, Center, Surround (Rear) L / R)and the Sub woofer to provide live surround audio.
  - Using the Down Mix method, the conventional Dolby Pro-Logic and Stereo are all compatible.
  - Each separated channels are played back at CD quality sound. (Frequency band: 20Hz ~ 20KHz)

- Linear PCM (Pulse Code Modulation)
  - Provides the high quality Digital sound without the audio data compression.
  - Various Digital Recordings are possible as shown in the table to the right.

Sampling Frequency	Bit Rate
48KHz	16bit
	20bit
	24bit
96KHz	16bit
	20bit
	24bit

- Dolby Digital compatible Audio Mode

Audio Coding Mode	Channel Format					Remark
		Front		Surround (Rear)		
	L	C	R	L	R	
1/0		O				Mono
2/0	O		O			Stereo
3/0	O	O	O			Surround
2/1	O		O	Mono		
3/1	O	O	O	Mono		
2/2	O		O	O	O	
3/2	O	O	O	O	O	

DVD-Video Feature 4

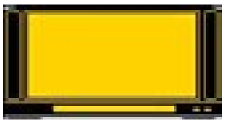
Multi-Language

- Audio Dubbing - Max. 8 Languages
- Subtitle - Max. 32 Languages. Capable of storing, and selectiong.
- Linear PCM (Pulse Code Modulation)

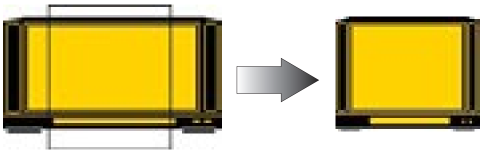
DVD-Video Feature 5

Multi-Aspect

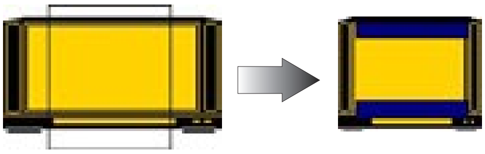
- Unlike the conventional VCD or LD, DVD-Video has the default of 16:9 Wide, and can be viewed using the conventional 4:3 TV, enabling the expansion of viewer selection capabilities.
  - 16 : 9 TV : Wide Mode (16:9 Wide Full Screen)
  - 4 : 3 TV : Letter Box Mode, Pan & Scan Mode



16:9 Wide



4:3 Pan & Scan



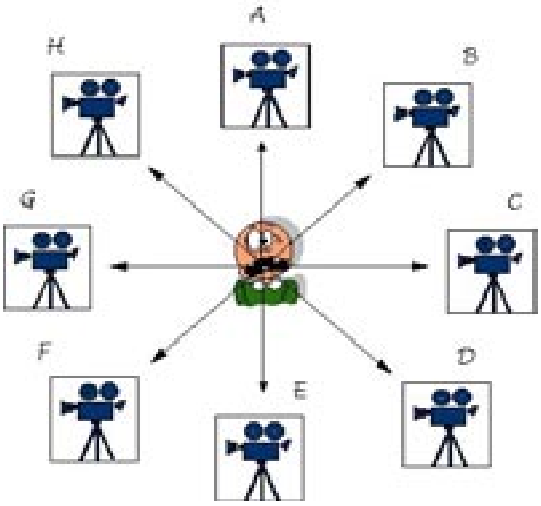
4:3 Letter Box

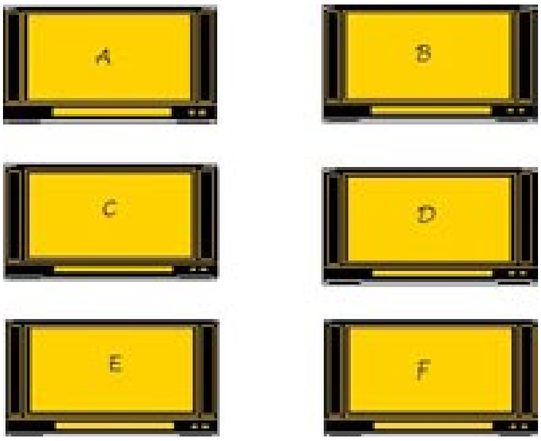
Note ; Only enable to be worked correctly by an appropriate data supported this function in Disc.

DVD-Video Feature 6

Multi-Angle

- Up to 9 angles of view may be stored, enabling the viewer to select a specific viewpoint at a given time.
  --> Especially, for the Music Video and Sports Title, this provides a more lively image of the scene.





Note ; Only enable to be worked correctly by an appropriate data supported this function in Disc.

DVD-Video Feature 7

Multi-Story

- DVD-Video provides the enviroment suitable for the bi-directional Software develoment, providing multiple scenarios. This feature enables the Multi-Story function.

OPTION

Parental Lock

- For the titles that are not suitable for children viewing, Parental Locks are set, requesting user defined passwords for viewing
- Parential Locks may be set on specific frames of the Title, enabling the player to skip those frames during playback.

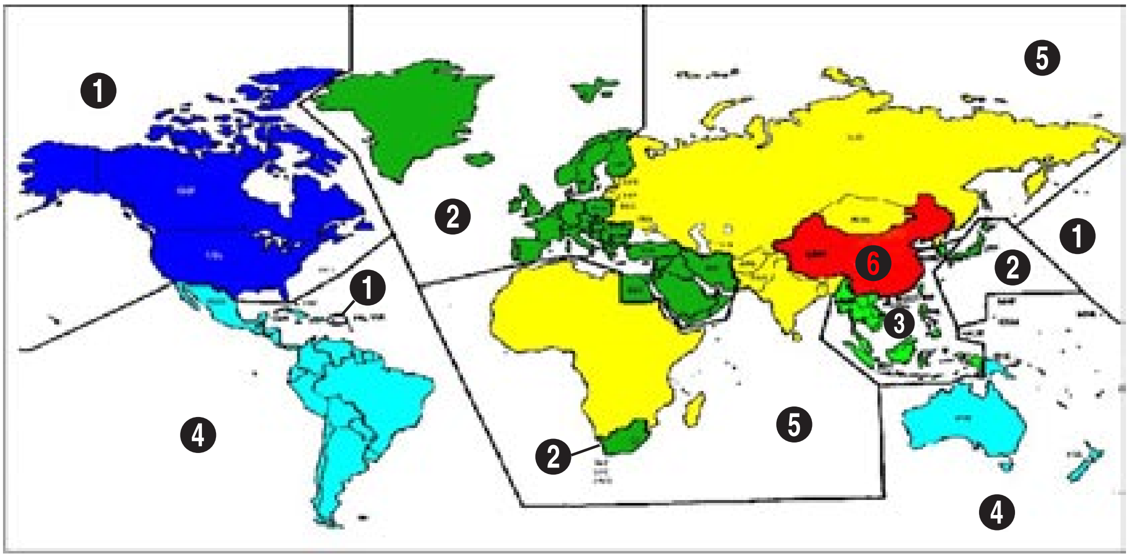
COPYRIGHT

Regional Code & Macrovision

- Classify the world into 6 regions, and if the DVD Title and the Player's “Reginal Code” do not agree, playback is prohibited.

- **Regionnal Coding is optional for the Soft developers (Region 0 All Code), but the Hardware developers must adopt the appropriate regionnal code for sale.**

  - Region 1 : The United States and its territories, Canada.
  - Region 2 : Europe, Japan, Greenland, Egypt, South Africa, the Middle East.
  - Region 3 : Taiwan, Hongkong, Korea, South East Asia.
  - Region 4 : Mexico, South America, Australia, New Zealand.
  - Region 5 : Russia, Eastern Europe, India, Africa.
  - Region 6 : China.   • Region 0 : Worldwide (All Code)



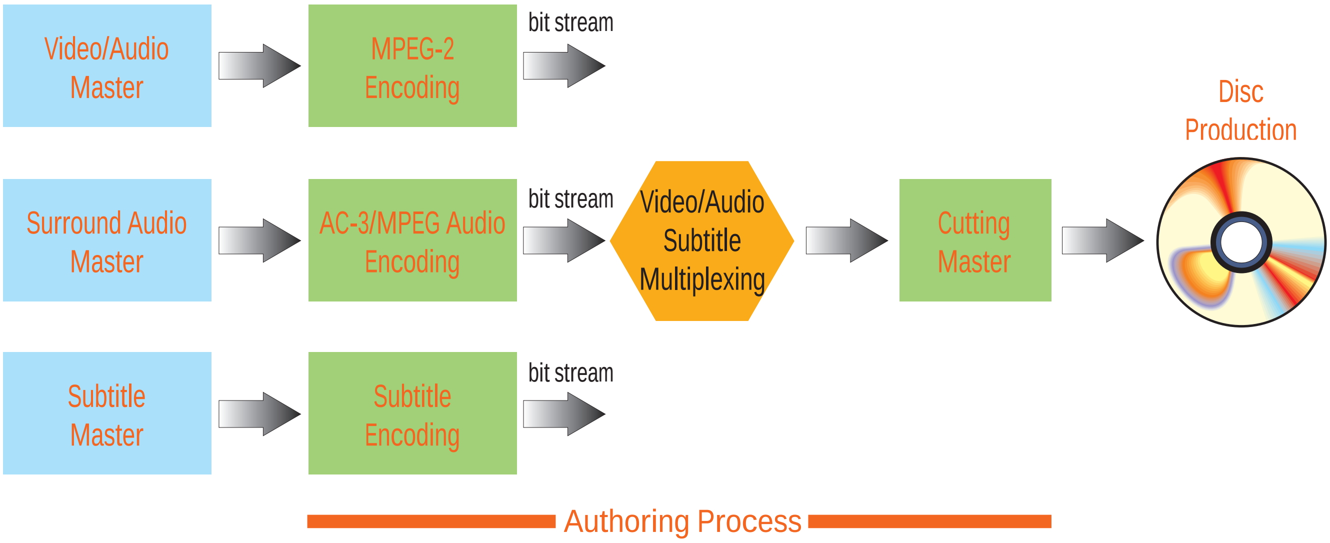
- Adoptation of the Macrovision System disables the copying on to other media.

Remark

DVD-Video Authoring Process

- The image quality of the DVD-Video may vary accoring to the quality of the Master and the Authoring Process
  - The image quality of the DVD-Video varies according to the Digital Mastering Source such as the conventional LD, VCD, or Original Film.
  - Different Authoring Process are used accoring to the Software developers, and this may affect the DVD image quality.

- **Authoring Process**


Video/Audio Master
MPEG-2 Encoding
bit stream
Surround Audio Master
AC-3/MPEG Audio Encoding
bit stream
Subtitle Master
Subtitle Encoding
bit stream
Video/Audio Subtitle Multiplexing
Cutting Master
Disc Production
Authoring Process

2-3 Flash & Drive Firmware Update of a DVD Recorder-VCR

WARNING

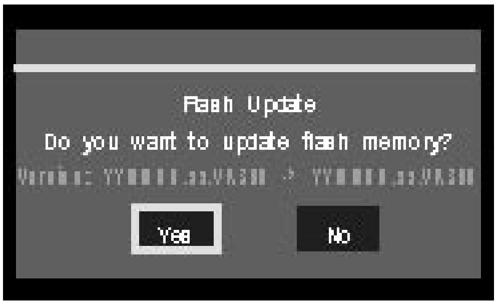
It is very important ; please read the below notice before updating your unit.
The following events may interrupt the update process and MAY RESULT IN PERMANENT DAMAGE TO THE UNIT WHILE UPDATING.

- Unplugging the power cord.
- Power Outage.
- Dirt or Scratch in the disc.
- Open a disc tray during processing.

2-3-1 Main Flash Update procedure

1) Press OPEN / CLOSE to open the disc tray.
2) Insert the update CD-R disc, label facing up.
3) Press OPEN / CLOSE to close the disc tray.

[Remote Control]

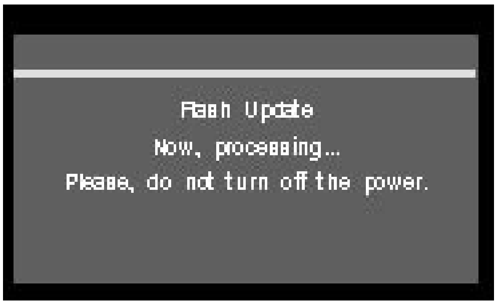


Flash Update
Do you want to update flash memory?

After checking old and new version, select "Yes" or "No" with " ◀ " or " ▶ " on the remote control.
* The indication of Version is "YYMMDD.xx.ModelName"

* If you can't see the message above, try to use other new disc instead of current one. Generally, this caused by disc quality and by disc creating problem.

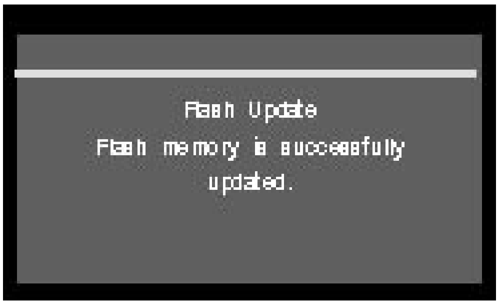
4) Press the ENTER button on the remote control.



Flash Update
Now, processing...
Please, do not turn off the power.

You can see "LOAD" on Front Display.

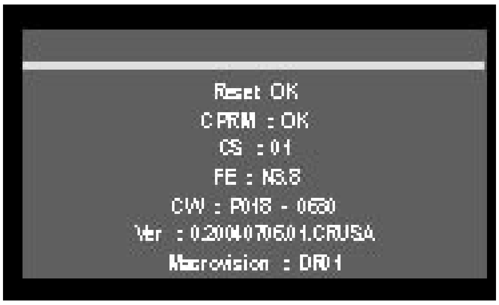
5) It takes about 5 minutes to finish a update.
The message on the screen will be displayed after finishing a update and the tray will be opened automatically. And then do not turn off the unit until it goes off automatically.



Flash Update
Flash memory is successfully
updated.

* If the message above isn't displayed after 10 minutes more and you can conclude that this unit had a critical damage after a Power off, replace a old flash with new one due to Flash memory's Damage.
(Location No. : DIC3 - Main PCB)

6) After removing a update disc, turn on the unit with power button and press REW and FF button on the front panel at the same time during 5 seconds. "CLR" will be displayed on the front display
The next screen will be displayed. Check the update version number. The Flash update is ended.

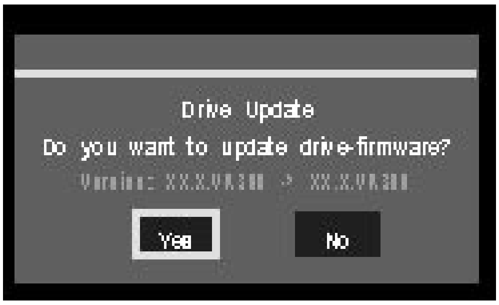


Reset OK
CPRM : OK
CS : 01
FE : N3.8
CW : P018 - 0630
Ver : 0.20040706.01.CRUSA
Macrovision : DR01

2-3-2 Drive Firm Update procedure

1) Press OPEN / CLOSE to open the disc tray.
2) Insert the update CD-R disc, label facing up.
3) Press OPEN / CLOSE to close the disc tray.
* It takes about 1~2 minutes to show below message.

[Remote Control]

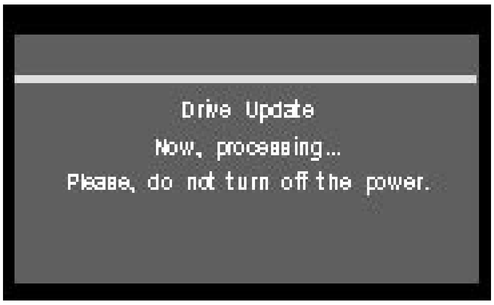


Drive Update
Do you want to update drive-firmware?

After checking old and new version, select "Yes" or "No" with "◀" or "▶" on the remote control.
* The indication of Version is "YYMMDD.xx.ModelName"

* If you can't see the message above, try to use other new disc instead of current one.
Generally, this caused by disc quality and by disc creating problem.

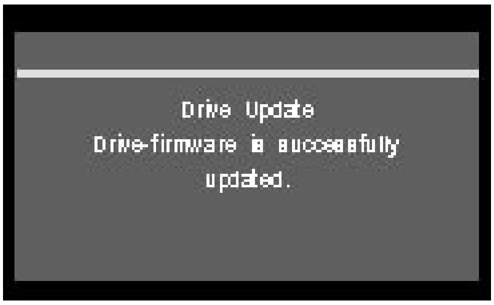
4) Press the ENTER button on the remote control.



Drive Update
Now, processing...
Please, do not turn off the power.

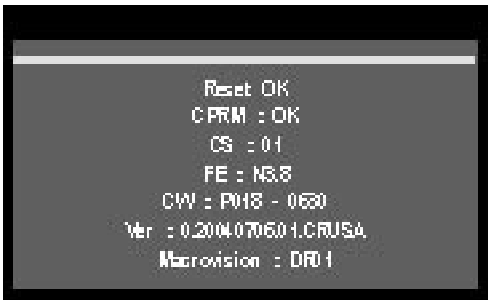
You can see "LOAD" on Front Display.

5) It takes about 1~2 minutes to finish a update.
The message on the screen will be displayed after finishing a update and the tray will be opened automatically. And then do not turn off the unit until it goes off automatically.



Drive Update
Drive-firmware is successfully
updated.

6) After removing a update disc, turn on the unit with power button and press REW and FF button on the front panel at the same time during 5 seconds.
"CLR" will be displayed on the front display and next screen will be displayed.
Check the update version number. Finally, the Drive Firmware update is ended.



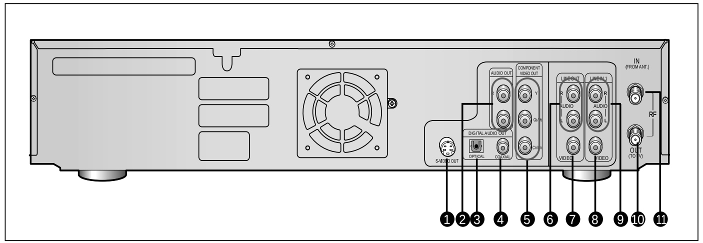
Reset OK
CPRM : OK
CS : 01
FE : N3.8
CW : P018 - 0620
Ver : 0.20040706.01.CRUSA
Macrovision : DR01

3. Product Specification

General	Power requirements	120V AC,60Hz
	Power consumption	45Watts
	Weight	9.03lb
	Dimensions	16.9in(W) x 10.6in(D) x 3.1in(H)
	Operating temp	+5°C to 35°C
	Other conditions	Keep level when operating. Less than 75% operating humidity
Input	Video	1.0 V p-p at 75ohm load, sync negative
		S-Video input (Y:1.0Vp-p,C: 0.286Vp-p at 75ohm load)
	Max.Audio Input Level	2Vrms
	DV Input	IEEE 1394(4P) compatible jack
	Receivable Channels	Regular TV broadcasting : VHF (2~13), UHF (14~69)
		Cable TV broadcasting: 1~125
Output	Audio	Audio output jacks 1,2
		Optical/coaxial digital audio support
		Max. 0.005% total harmonic distortion (T.H.D) *at average 1 kHz
	Video	Video output jacks 1,2
		S-Video output 1 (Y: 1.0Vp-p, C:0.286Vp-p at 75 ohm load)
		Component output
		(Y: 1.0Vp-p ,Pb:0.70Vp-p, Pr:0.70Vp-p at 75ohm load)
DVD	Picture compression format	MPEG-II
	Audio compression format	Dolby AC-3 256kbps
	Recording Quality	XP (about 8Mbps), SP (about 4Mbps), LP (about 2Mbps), EP (about 1.2Mbps)
	Video S/N ratio	Min. 50dB at standard recording
	Audio S/N ratio	Min. 75dB
	Audio frequency characteristics	20 Hz ~ 20 KHz

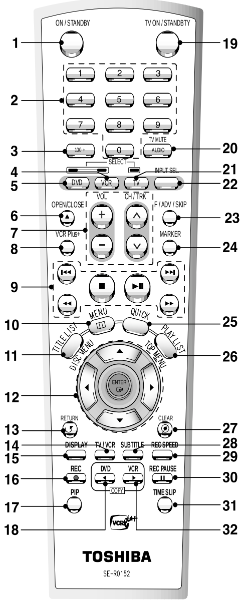
4. Operating Instructions

Rear Panel


IN
(FROM ANT.)
RF
OUT
(TO TV)
AUDIO OUT
COMPONENT VIDEO OUT
DIGITAL AUDIO OUT
OPTICAL
COAXIAL
S-VIDEO OUT
AUDIO
VIDEO
1
2
3
4
5
6
7
8
9
10
11

1. S-VIDEO OUT JACK
2. AUDIO OUT L,R JACK
3. DIGITAL AUDIO OUT JACK (OPTICAL)
4. DIGITAL AUDIO OUT JACK (COAXIAL)
5. COMPONENT VIDEO OUT JACK
6. AUDIO OUT R,L JACK
7. VIDEO OUT JACK
8. VIDEO IN JACK
9. AUDIO IN R,L JACK
10. RF OUT TO TV JACK
11. RF ANTENNA INPUT JACK

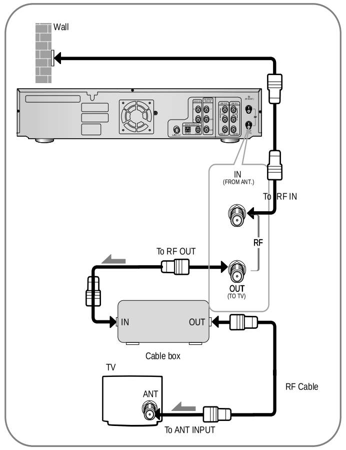
Tour of the Remote Control


ON / STANDBY
TV ON / STANDBY
1
2
3
4
5
6
7
8
9
0
100+
TV MUTE
AUDIO
SELECT
INPUT SEL.
DVD
VCR
TV
OPEN/CLOSE
VOL
CH / TRK
F.ADV / SKIP
VCR Plus+
MARKER
MENU
QUICK
TITLE LIST
DISC MENU
PLAY LIST
TOP MENU
ENTER
RETURN
CLEAR
DISPLAY
TV / VCR
SUBTITLE
REC SPEED
REC
REC PAUSE
PIP
COPY
TIME SLIP
TOSHIBA
SE-R0152
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
31
32

1. **POWER Button**
2. **NUMBER Button**
3. **100+ Button**
   Press this to select channel 100 or higher.
4. **VCR Button**
5. **DVD Button**
   Press this when you use a DVD.
6. **OPEN/CLOSE Buttons**
   To open and close the disc tray.
7. **TV Control Button**
   - VOLUME Button
     TV volume adjustment
   - CHANNEL Button
     Use this to select a TV channel.
8. **VCR Plus+ Button**
   Use to recording using VCR Plus+ function.
9. **Playback-related Buttons**
   Forward/Rewind, Search, Skip, Stop, Play/Pause
10. **MENU Button**
    Brings up the DVD Recorder-VCR's setup menu.
11. **TITLE LIST(DISC MENU) Button**
    Use this to enter the View Recording list/disk menu.
12. **ENTER/DIRECTION Buttons**
    (UP/DOWN or LEFT/RIGHT Buttons)
    This button functions as a toggle switch.
13. **RETURN Button**
    Returns to a previous menu.
14. **TV/VCR Button**
15. **DISPLAY Button**
    This will display current setting or disc status.
16. **REC Button**
    Use to make a recording on DVD-RAM/-RW/-R discs.
17. **PIP Button**
    Use to watch a subprogram on the PIP screen while watching the main program on the main screen.
18. **DVD COPY Button**
    Press this when you copy VCR to DVD.
19. **TV POWER Button**
20. **AUDIO/TV MUTE Button**
    Use this to access various audio functions on a disc (DVD mode).
    This operates as sound mute. (TV mode)
21. **TV Button**
    Press this to operate TV.
22. **INPUT Button**
    Select line input signal in external input mode(Tuner or Line input)
23. **F.ADV/SKIP Button**
24. **MARKER Button**
    Use this to bookmark a position while playing a disc.
25. **QUICK Button**
    Use this to view the status of the disc that is being played.
26. **PLAY LIST(TOP MENU) Button**
    Use this to return to the Top menu, or to view the recorded files list.
27. **CLEAR Button**
28. **SUBTITLE Button**
    Press this to switch the DVD's subtitle language.
29. **REC SPEED Button**
30. **REC PAUSE Button**
    Use this to pause during recording.
31. **TIME SLIP Button**
32. **VCR COPY Button**
    Press this when you copy DVD to VCR.

Method 3 : Antenna + DVD Recorder-VCR + Cable box +TV : Cable box with a few scrambled channels

You can record non-scrambled channels by selecting the channel on the cable box. You cannot record scrambled channels that require a cable box.



Step 3: Connecting the Video Cable

There are several ways to connect your DVD Recorder-VCR. Select one of the following video connecting methods that best suits you below.

- Method 1 : Connecting to a Video input jack
- Method 2 : Connecting to an S-video input jack
- Method 3 : Connecting to Component video input jacks in 480i mode
- Method 4 : Connecting to Component video input jacks in 480p mode

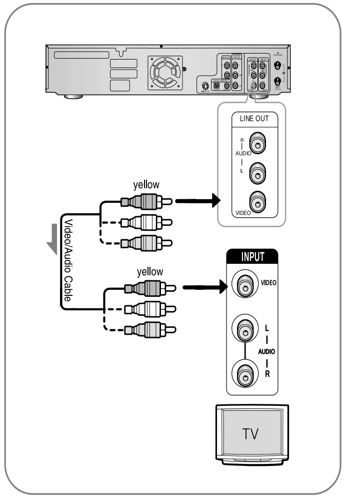
S-Video, Component video and Progressive Output Modes

- S-Video and Component video output are available only if your TV supports S-Video input or Component video input, respectively. If S-Video or Component video output does not work, check the TV connections and the TV input selection settings.
- Compared to standard interlaced video, progressive scan doubles the amount of video beam lines fed to your TV, resulting in a more stable, flicker-free, and clear image than interlaced video. The progressive scan video output jack is used in progressive output mode. This is only available with TVs that support progressive scan.
- Consumers should note that not all high definition television sets are fully compatible with this product and may cause artifacts to be displayed in the picture. If you experience 480 progressive scan picture problems, it is recommended that you switch the connection to the 'standard definition' output. If there are questions regarding TV set compatibility with this unit, please contact our customer service center.

Method 1 : Connecting to a video input jack

Connect a video(yellow) cable between the VIDEO (yellow) OUT jack on DVD Recorder-VCR and VIDEO(yellow) IN jack on the TV(or AV amplifier).

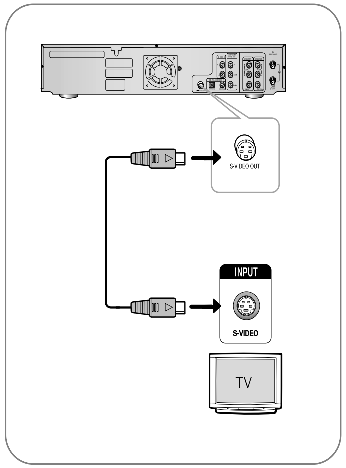
- You will enjoy regular quality images.
- Connect audio cables (white and red) between the ANALOG AUDIO OUT jack on the DVD Recorder-VCR and AUDIO IN jack on TV (or AV amplifier).



Method 2 : Connecting to an S-video input jack

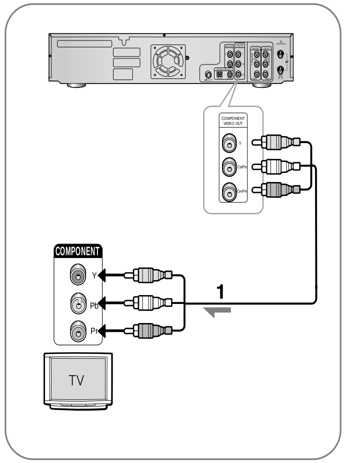
Connect an S-video cable(not supplied) between the S-VIDEO OUT jack on DVD Recorder-VCR and S-VIDEO IN jack on the TV (or AV amplifier).

- You will enjoy high quality images. S-Video separates the picture element into black and white (Y) and color (C) signals to present clearer images than regular video input mode.



Method 3 : Connecting to Component video input jacks(Y,CB/TB,CR/PB) in 480i mode

1. Connect Component video cables(not supplied) between the COMPONENT VIDEO OUT jacks on DVD Recorder-VCR and COMPONENT VIDEO IN jacks on the TV (or AV amplifier).
2. Make sure that the disc has stopped completely before changing the mode.
   If anything is not displayed on front panel display, it is 480i Mode.



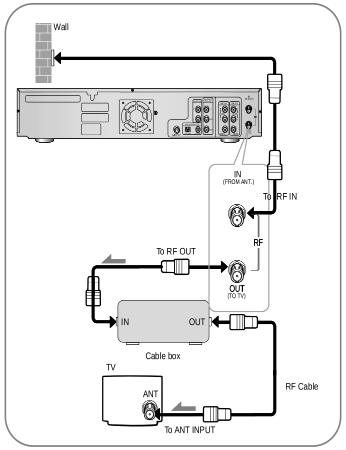
- You will enjoy high quality accurate color reproduction. Component video separates the picture element into black and white (Y), blue (Pb) and red (Pr) signals to present most clear and clean images.

Note

- ■ Make sure that the color coded connections match. The Y, Pb and Pr component output jacks of your DVD Recorder-VCR must be connected to the exact corresponding component input jacks on your TV. Otherwise, red or blue images will be displayed on the TV screen.
- ■ Make sure that the left and right audio output jacks of your DVD Recorder-VCR are connected to the left and right audio input jacks of your TV, respectively.(page 20)

Method 3 : Antenna + DVD Recorder-VCR + Cable box +TV : Cable box with a few scrambled channels

You can record non-scrambled channels by selecting the channel on the cable box. You cannot record scrambled channels that require a cable box.



Step 3: Connecting the Video Cable

There are several ways to connect your DVD Recorder-VCR. Select one of the following video connecting methods that best suits you below.

- Method 1 : Connecting to a Video input jack
- Method 2 : Connecting to an S-video input jack
- Method 3 : Connecting to Component video input jacks in 480i mode
- Method 4 : Connecting to Component video input jacks in 480p mode

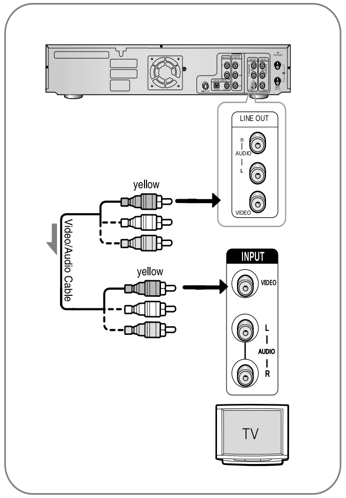
S-Video, Component video and Progressive Output Modes

- S-Video and Component video output are available only if your TV supports S-Video input or Component video input, respectively. If S-Video or Component video output does not work, check the TV connections and the TV input selection settings.
- Compared to standard interlaced video, progressive scan doubles the amount of video beam lines fed to your TV, resulting in a more stable, flicker-free, and clear image than interlaced video. The progressive scan video output jack is used in progressive output mode. This is only available with TVs that support progressive scan.
- Consumers should note that not all high definition television sets are fully compatible with this product and may cause artifacts to be displayed in the picture. If you experience 480 progressive scan picture problems, it is recommended that you switch the connection to the 'standard definition' output. If there are questions regarding TV set compatibility with this unit, please contact our customer service center.

Method 1 : Connecting to a video input jack

Connect a video(yellow) cable between the VIDEO (yellow) OUT jack on DVD Recorder-VCR and VIDEO(yellow) IN jack on the TV(or AV amplifier).

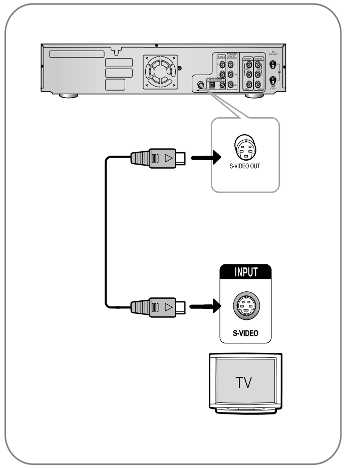
- You will enjoy regular quality images.
- Connect audio cables (white and red) between the ANALOG AUDIO OUT jack on the DVD Recorder-VCR and AUDIO IN jack on TV (or AV amplifier).



Method 2 : Connecting to an S-video input jack

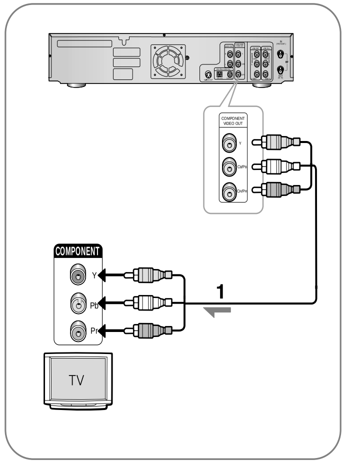
Connect an S-video cable(not supplied) between the S-VIDEO OUT jack on DVD Recorder-VCR and S-VIDEO IN jack on the TV (or AV amplifier).

- You will enjoy high quality images. S-Video separates the picture element into black and white (Y) and color (C) signals to present clearer images than regular video input mode.



Method 3 : Connecting to Component video input jacks(Y,CB/TB,CR/PB) in 480i mode

1. Connect Component video cables(not supplied) between the COMPONENT VIDEO OUT jacks on DVD Recorder-VCR and COMPONENT VIDEO IN jacks on the TV (or AV amplifier).
2. Make sure that the disc has stopped completely before changing the mode.
   If anything is not displayed on front panel display, it is 480i Mode.



- You will enjoy high quality accurate color reproduction. Component video separates the picture element into black and white (Y), blue (Pb) and red (Pr) signals to present most clear and clean images.

Note

- ■ Make sure that the color coded connections match. The Y, Pb and Pr component output jacks of your DVD Recorder-VCR must be connected to the exact corresponding component input jacks on your TV. Otherwise, red or blue images will be displayed on the TV screen.
- ■ Make sure that the left and right audio output jacks of your DVD Recorder-VCR are connected to the left and right audio input jacks of your TV, respectively.(page 20)

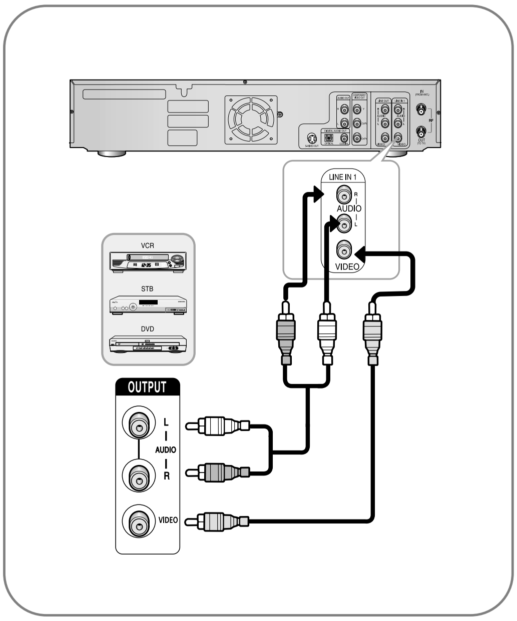
Step 5 : Connecting External Devices

This allows you to connect your DVD Recorder-VCR to other external devices and view or record their outputs.

- **Method 1** : Connecting a VCR, Set-Top Box(STB) or DVD player to the AUDIO/VIDEO LINE IN 1 jacks.
- **Method 2** : Connecting a Camcorder to the LINE IN 2 in jacks.
- **Method 3** : Connecting a Camcorder to the DV IN jack.

Method 1 : Connecting a VCR, Settop Box(STB) or DVD player to the AUDIO/VIDEO LINE IN 1 jacks

Connecting a VCR or external device to AUDIO/VIDEO LINE IN 1 jacks of the DVD Recorder-VCR.
You can record a copy free contest from connected equipment (VCR, STB or DVD).

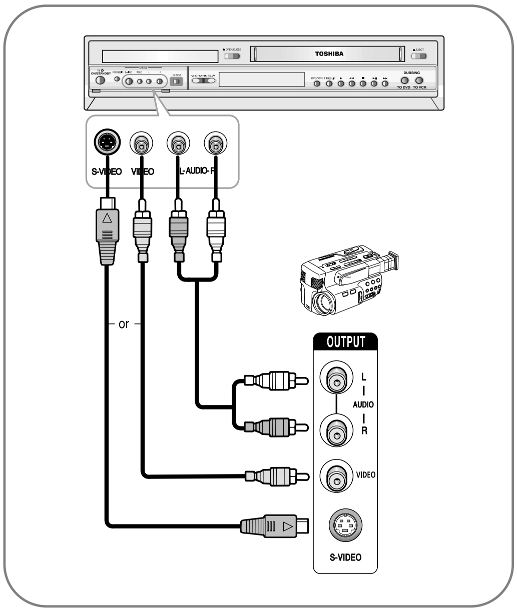


Note

- ■ You can also use the LINE IN 2 jacks on the front panel of the DVD Recorder-VCR.
- ■ When the S-Video jack and Video jack are both connected, the S-Video jack will have priority. Line Selection will be automatically done.
- ■ Copy protected content cannot be recorded.

Method 2 : Connecting a Camcorder to the LINE IN 2 jacks

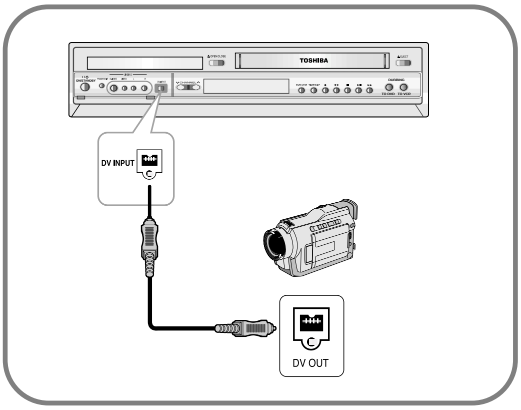
You can also use the LINE IN 2 jacks on the front panel of the DVD Recorder-VCR. You can record from connected equipment.
When an input source is inserted into LINE IN 2 while viewing TV, the input will be switched to LINE IN 2 automatically.



Method 3 : Connecting a Camcorder to the DV IN jack

If your camcorder has a DV output jack, connect it to the DV input jack of your DVD Recorder-VCR.

- If your camcorder has a DV output jack, see page 69 for more information.



- Some models of DV format digital video cameras may support a different compression format. From such equipment, recording is not possible.
- Depending on the models of DV format digital video cameras, recording may not work properly or some functions may be disabled.

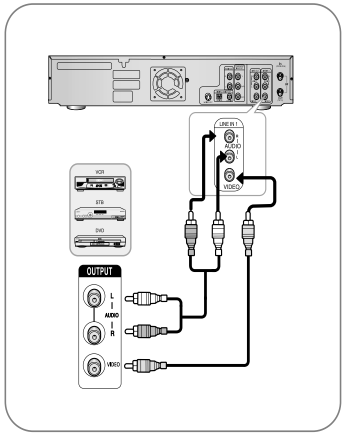
Step 5 : Connecting External Devices

This allows you to connect your DVD Recorder-VCR to other external devices and view or record their outputs.

- **Method 1** : Connecting a VCR, Set-Top Box(STB) or DVD player to the AUDIO/VIDEO LINE IN 1 jacks.
- **Method 2** : Connecting a Camcorder to the LINE IN 2 in jacks.
- **Method 3** : Connecting a Camcorder to the DV IN jack.

Method 1 : Connecting a VCR, Settop Box(STB) or DVD player to the AUDIO/VIDEO LINE IN 1 jacks

Connecting a VCR or external device to AUDIO/VIDEO LINE IN 1 jacks of the DVD Recorder-VCR.
You can record a copy free contest from connected equipment (VCR, STB or DVD).

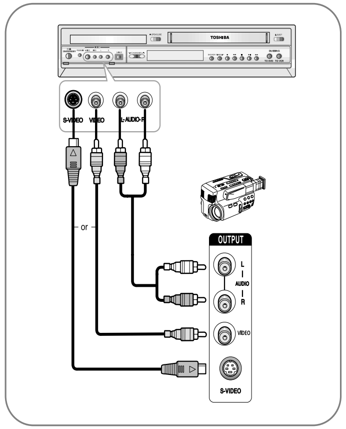


Note

- ■ You can also use the LINE IN 2 jacks on the front panel of the DVD Recorder-VCR.
- ■ When the S-Video jack and Video jack are both connected, the S-Video jack will have priority. Line Selection will be automatically done.
- ■ Copy protected content cannot be recorded.

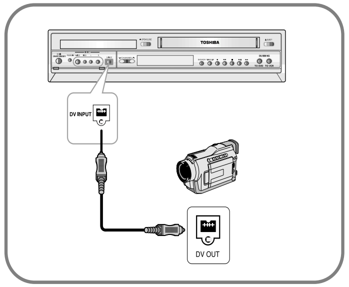
Method 2 : Connecting a Camcorder to the LINE IN 2 jacks

You can also use the LINE IN 2 jacks on the front panel of the DVD Recorder-VCR. You can record from connected equipment.
When an input source is inserted into LINE IN 2 while viewing TV, the input will be switched to LINE IN 2 automatically.



Method 3 : Connecting a Camcorder to the DV IN jack

If your camcorder has a DV output jack, connect it to the DV input jack of your DVD Recorder-VCR.
- If your camcorder has a DV output jack, see page 69 for more information.



- Some models of DV format digital video cameras may support a different compression format. From such equipment, recording is not possible.
- Depending on the models of DV format digital video cameras, recording may not work properly or some functions may be disabled.

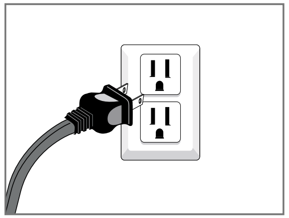
Step 6 : Connecting the Power Cord

After all connections are complete, plug the power cord in the wall outlet.

"AUTO" in the front panel display flickers. This means that the current time is being set automatically (Auto Program) through the antenna under connection. The setup may take several minutes.

When it normally operates, the current time is automatically set and displayed in the front panel display.

If "- - - -" appears, however, it means that auto time setting has failed.
In that case, set the current time through the manual clock set, as shown in pages 27~28.

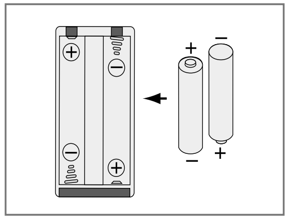


Step 7 : Preparing the Remote Control

Install Batteries in the Remote Control
- Open the battery cover on the back of the remote.
- Insert two AA batteries. Make sure that the polarities (+ and -) are aligned correctly.
- Replace the battery cover.

If the remote does not operate properly:
- Check the polarity + - of the batteries (Dry-Cell)
- Check if the batteries are drained.
- Check if the remote sensor is blocked by obstacles.
- Check if there is any fluorescent lighting nearby.

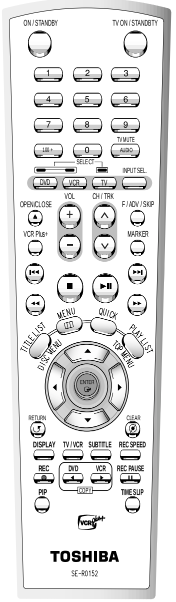
Dispose of used batteries according to local environmental regulations. Do not put them in the household trash.



- Do not expose the remote sensor of the recorder to a strong light source such as direct sunlight or other illumination. If you do so, you may not be able to operate the recorder via the remote control.

Setting the Remote Control

Your VCR remote control will work with Toshiba televisions and compatible brands.


ON / STANDBY
TV ON / STANDBY
TV MUTE
AUDIO
SELECT
INPUT SEL.
DVD
VCR
TV
OPEN/CLOSE
VOL
CH / TRK
F / ADV / SKIP
VCR Plus+
MARKER
MENU
QUICK
TITLE LIST
PLAY LIST
DISC MENU
TOP MENU
ENTER
RETURN
CLEAR
DISPLAY
TV / VCR
SUBTITLE
REC SPEED
REC
REC PAUSE
COPY
PIP
TIME SLIP
TOSHIBA
SE-R0152

To determine whether your television is compatible, follow the instructions below.

1. Switch your television on.
2. Point the remote control towards the television.
3. Hold down the TV button and enter the two-figure code corresponding to the brand of your television, by pressing the appropriate numeric buttons.

Brand	Codes	Brand	Codes
SAMSUNG	01,14,15,23,31	LOEWE	28
SHARP	02,16,22	ZENITH	17
SONY	03	LG	06,08,18
RCA	07,29	MAGNAVOX	04
TOSHIBA	09	EMERSON	21
PANASONIC	12,24	SANYO	05,20
HITACHI	10	DAEWOO	19
NEWSAN	27	NOBLEX	25
JVC	11	TELEFUNKEN	26
MITSUBISHI	13	GRADIENT	30

Result: If your television is compatible with the remote control, it will switch off.
It is now programmed to operate with the remote control.

Note
- ■ If several codes are indicated for your television brand, try each one in turn until you find one that works.

You can then control the television using the following buttons.

Button	Function
POWER	Used to switch the television on and off.
INPUT SEL.	Used to select an external source.
VOL + or -	Used to adjust the volume of the television.
CH (∧ or ∨)	Used to select the required channel.
TV MUTE	Used to toggle the sound on and off.

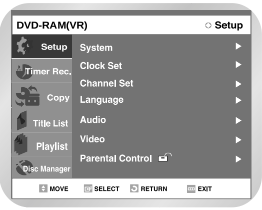
Note
- ■ The various functions will not necessarily work on all televisions. If you encounter problems, operate the television by using the TV's remote control.

System Setup

- *On-Screen Menu Navigation* 25
- *Auto Clock Set* 26
- *Manual Clock Set* 27
- *Channel Set* 28
- *Setting Up the Language Features* 29
- *Setting Up the Audio Options* 30
- *Setting Up the Display (Video) Options* . . . 31
- *Setting Up the Parental Control* . . . 32
- *Auto Channel Memory* 33
- *Channel Add/Delete* 34
- *RF Out Channel* 35
- *VCR Setting* 36
- *Video Input* 37
- *Front Display* 38

On-Screen Menu Navigation

The on-screen menus allow you to enable or disable various functions on your DVD Recorder-VCR. Use the following buttons to open and navigate through the on-screen menus.


DVD-RAM(VR)
○ Setup
Setup
Timer Rec.
Copy
Title List
Playlist
Disc Manager
System
Clock Set
Channel Set
Language
Audio
Video
Parental Control
MOVE
SELECT
RETURN
EXIT

1 MENU Button

Press this button on the remote control while the DVD or VCR is in Stop or Play mode to open the on-screen MAIN MENU.

2 Up/Down and Left/Right

Use these buttons to move the selection bar up/down and left/right to cycle through the menu options.

3 Enter Button

Press this button on the remote control to confirm any new settings.

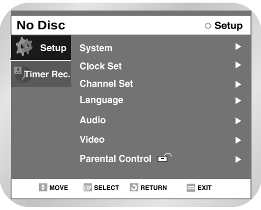
4 Return Button

Press this button on the remote control to return to the last MENU screen displayed or to exit the on-screen MENU all together.

Auto Clock Set

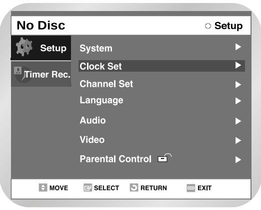
This menu is used to set the current time. You need to set the time to use timer recording.

1 With the unit in Stop mode, press the MENU button.

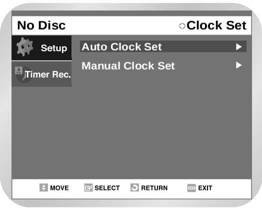

No Disc
○ Setup
Setup
Timer Rec.
System
Clock Set
Channel Set
Language
Audio
Video
Parental Control
MOVE
SELECT
RETURN
EXIT

2 Using the ▲▼ buttons, move the selection bar to “Setup” then press Enter to select.

3 Select Clock Set using the ▲▼ buttons, then press the ▶ or ENTER button.

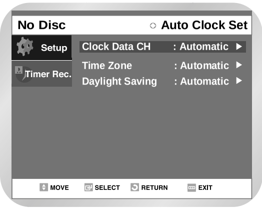

No Disc
○ Setup
Setup
Timer Rec.
System
Clock Set
Channel Set
Language
Audio
Video
Parental Control
MOVE
SELECT
RETURN
EXIT

4 Select Auto Clock Set using the ▲▼ buttons, then press the ▶ or ENTER button.


No Disc
○Clock Set
Setup
Timer Rec.
Auto Clock Set
Manual Clock Set
MOVE
SELECT
RETURN
EXIT

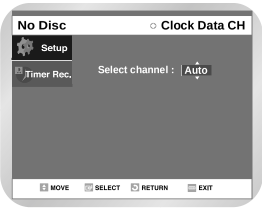
Note
- ■ You must have the antenna connected to set the Auto Clock. See page Antenna Connections
- ■ The Clock will be automatically set when you turn off the recorder.

5 Select the sub menu (Clock Data CH, Time Zone or Daylight Saving) using the ▲▼ buttons, then press the ▶ or ENTER button.


No Disc
○ Auto Clock Set
Setup
Timer Rec.
Clock Data CH : Automatic
Time Zone : Automatic
Daylight Saving : Automatic
MOVE
SELECT
RETURN
EXIT

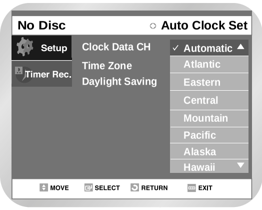
Clock Data CH

Select a channel that carries a time signal using the ▲▼ buttons then press the ▶ or ENTER button.
Select Auto to set the channel automatically.


No Disc
○ Clock Data CH
Setup
Timer Rec.
Select channel : Auto
MOVE
SELECT
RETURN
EXIT

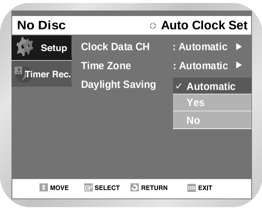
Time ZONE

Select the time zone of your area using the ▲▼ buttons then press the ▶ or ENTER button. Select Automatic to set the time zone automatically.


No Disc
○ Auto Clock Set
Setup
Timer Rec.
Clock Data CH
Time Zone
Daylight Saving
✓ Automatic
Atlantic
Eastern
Central
Mountain
Pacific
Alaska
Hawaii
MOVE
SELECT
RETURN
EXIT

Daylight Saving

Select the On, Off or Auto using the ▲▼ buttons then press the ▶ or the ENTER button.
Select Automatic to set the daylight saving automatically.


No Disc
○ Auto Clock Set
Setup
Timer Rec.
Clock Data CH : Automatic
Time Zone : Automatic
Daylight Saving
✓ Automatic
Yes
No
MOVE
SELECT
RETURN
EXIT

Note
- ■ If your clock is set to the wrong time zone or daylight saving, you can adjust these settings without turning off the Auto Clock Set function.

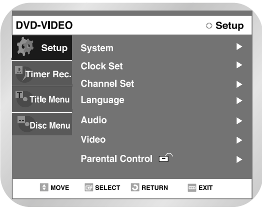
Manual Clock Set

If Auto Setup fails to set the DVD Recorder-VCR’s internal clock by locating a local TV station, follow these steps to set the date and time manually.
NOTE: For accurate Timer Recording, your DVD Recorder-VCR’s internal clock must be set correctly.

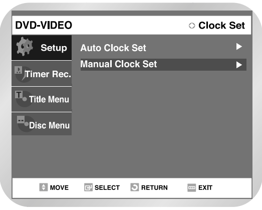
1 **Open “MENU”**
Press the MENU button while the DVD or VCR is in Stop or Play mode.

2 **Select “Setup”**
Using the ▲▼ buttons, move the selection bar to “Setup” then press ENTER to select.

3 **Select “Clock Set”**
Use the ▲▼ buttons to highlight “Clock Set” then press the ENTER button.


DVD-VIDEO
○ Setup
Setup
Timer Rec.
Title Menu
Disc Menu
System
Clock Set
Channel Set
Language
Audio
Video
Parental Control
MOVE
SELECT
RETURN
EXIT

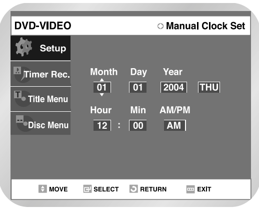
4 **Select “Manual Clock Set”**
Move the highlight to “Manual Clock Set”, then press the ENTER button.
• The Clock Set will change as shown.


DVD-VIDEO
○ Clock Set
Setup
Timer Rec.
Title Menu
Disc Menu
Auto Clock Set
Manual Clock Set
MOVE
SELECT
RETURN
EXIT

5 Set the Clock

Use the LEFT/RIGHT buttons to select each of the following options, then use the ▲▼ buttons to set each option:

- **Month** – Set the month
- **Day** – Set the day.
- **Year** – Set the year
- **Hour** – Set the hour
- **Minute** – Set the minute
- **AM/PM** – Set the AM/PM


DVD-VIDEO
Manual Clock Set
Setup
Timer Rec.
Title Menu
Disc Menu
MOVE
SELECT
RETURN
EXIT

Month 01 Day 01 Year 2004 THU
Hour 12 : Min 00 AM/PM AM

Channel Set

This feature allows you to manually set the DVD Recorder-VCR's tuner band to Antenna or Cable, whichever you connected to the Antenna In jack during initial setup.

- Use this setting only if Auto Setup detected the incorrect tuner band, i.e. channels are coming in on the wrong channel numbers.

1 Open "MENU"

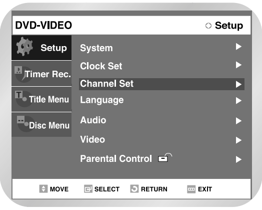
With the DVD in Stop press the MENU button.

2 Select "Setup"

Using the ▲▼ buttons, move the selection bar to "Setup" then press ENTER to select.

3 Select "Channel Set"

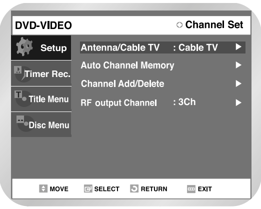
Using the ▲▼ buttons, move the selection bar to "Channel Set", then press ENTER to select.


DVD-VIDEO
Setup
Setup
Timer Rec.
Title Menu
Disc Menu
System
Clock Set
Channel Set
Language
Audio
Video
Parental Control
MOVE
SELECT
RETURN
EXIT

4 Select "Antenna/Cable TV"

Move the selection arrow to "Antenna/Cable TV" then press right button to select from the following options:

- Antenna - Select if the DVD Recorder-VCR is connected to an indoor or outdoor VHF/UHF Antenna.
- Cable TV - Select if the DVD Recorder-VCR is connected to Cable TV.


DVD-VIDEO
Channel Set
Setup
Timer Rec.
Title Menu
Disc Menu
Auto Channel Memory
Channel Add/Delete
MOVE
SELECT
RETURN
EXIT

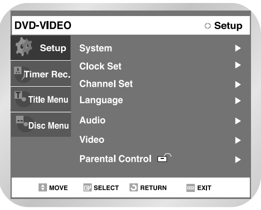
Antenna/Cable TV : Cable TV
RF output Channel : 3Ch

Setting Up the Language Features

If you set the player menu, disc menu, audio and subtitle language in advance, they will come up automatically every time you watch a movie.

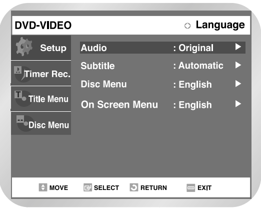
1 With the unit in Stop mode, press the MENU button on the remote.

2 Select Setup using ▲▼ buttons, then press the ► or ENTER button.


DVD-VIDEO
Setup
Setup
Timer Rec.
Title Menu
Disc Menu
System
Clock Set
Channel Set
Language
Audio
Video
Parental Control
MOVE
SELECT
RETURN
EXIT

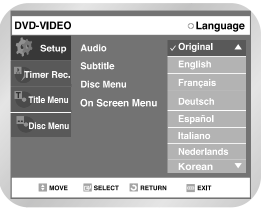
3 Select Language using ▲▼ buttons, then press the ► or ENTER button.
Language setup menu will be displayed.

4 Use ▲▼ buttons to select the desired sub menu and press the ENTER or ► button.


DVD-VIDEO
Language
Setup
Timer Rec.
Title Menu
Disc Menu
MOVE
SELECT
RETURN
EXIT

Audio : Original
Subtitle : Automatic
Disc Menu : English
On Screen Menu : English

5 Select the desired Language using ▲▼ buttons, then press the ► or ENTER button.


DVD-VIDEO
Language
Setup
Timer Rec.
Title Menu
Disc Menu
Audio
Subtitle
Disc Menu
On Screen Menu
✓Original
English
Français
Deutsch
Español
Italiano
Nederlands
Korean
MOVE
SELECT
RETURN
EXIT

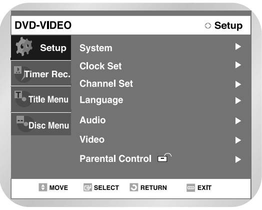
Note
- ■ Press the RETURN or ◄ button to return to the previous menu. Press the MENU button to exit the menu.

Setting Up the Audio Options

If you set the player menu, disc menu, audio and subtitle language in advance, they will come up automatically every time you watch a movie.

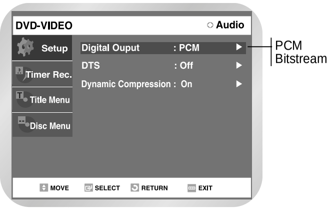
1 With the unit in Stop mode, press the MENU button on the remote.

2 Select Setup using ▲▼ buttons, then press the ► or ENTER button.


DVD-VIDEO
○ Setup
Setup
Timer Rec.
Title Menu
Disc Menu
System ►
Clock Set ►
Channel Set ►
Language ►
Audio ►
Video ►
Parental Control ►
MOVE
SELECT
RETURN
EXIT

3 Select Audio using ▲▼ buttons, then press the ► or ENTER button.
Audio setup menu will be displayed.

4 Use ▲▼ buttons to select the desired sub menu and press the ENTER or ► button.


DVD-VIDEO
○ Audio
Setup
Timer Rec.
Title Menu
Disc Menu
Digital Ouput : PCM ►
DTS : Off ►
Dynamic Compression : On ►
PCM
Bitstream
MOVE
SELECT
RETURN
EXIT

5 Use the ▲▼ buttons to select the desired item.
Then press the RIGHT or ENTER button.

Note
■ Press the RETURN or ◄ button to return to the previous menu. Press the MENU button to exit the menu.

Digital Output

1. PCM : Converts to PCM(2CH) 48kHz audio. Select PCM when using the Analog Audio Outputs.
2. Bitstream : Converts to Dolby Digital Bitstream (5.1CH). Select Bitstream when using the Digital Audio Output.

Note
■ Be sure to select the correct Digital Output or no audio will be heard.

DTS

1. Off : Doesn't output digital signal.
2. On : Outputs DTS Bitstream via digital output only. Select DTS when connecting to a DTS Decoder.

Note
■ When DTS soundtrack is played, sound is not output from Analog Audio Output.

Dynamic Compression

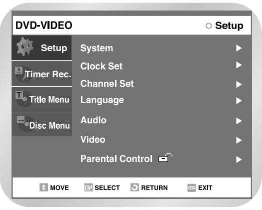
1. On : To select dynamic compression.
2. Off : To select the standard range.

Setting Up the Display(Video) Options

This function allows you to setup the TV screen settings.

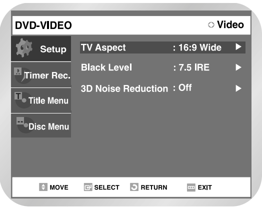
1 With the unit in Stop mode, press the MENU button on the remote.
You can't use the Setup functions during playback.

2 Select Setup using ▲▼ buttons, then press the ► or ENTER button.


DVD-VIDEO
○ Setup
Setup
Timer Rec.
Title Menu
Disc Menu
System ►
Clock Set ►
Channel Set ►
Language ►
Audio ►
Video ►
Parental Control ►
MOVE
SELECT
RETURN
EXIT

3 Select Video using ▲▼ buttons, then press the ► or ENTER button.
Video option menu will be displayed.

4 Select the sub menu using ▲▼ buttons, then press the ► or ENTER button.


DVD-VIDEO
○ Video
Setup
Timer Rec.
Title Menu
Disc Menu
TV Aspect : 16:9 Wide ►
Black Level : 7.5 IRE ►
3D Noise Reduction : Off ►
MOVE
SELECT
RETURN
EXIT

5 Use the ▲▼ buttons to select the desired item.
Then press the RIGHT or ENTER button.

Note
■ Press the RETURN or ◄ button to return to the previous menu. Press the MENU button to exit the menu.

Display(Video) Options

This function depends on disc type. It may not work for some disc types.

TV Aspect
Depending on the type of television you have, you may want to adjust the screen setting. (aspect ratio)
- **4:3 Letter Box** : Select when you want to see the total 16:9 ratio screen DVD supplies, even though you have a TV with a 4:3 ratio screen. Black bars will appear at the top and bottom of the screen.
- **4:3 Pan - Scan** : Select this for conventional size TV when you want to see the central portion of the 16:9 screen. (Extreme left and right side of movie picture will be cut off.)
- **16:9 Wide** : You can view the full 16:9 picture on your widescreen TV.

Black Level
Adjusts the brightness of the screen.
- **0 IRE** : This is the standard NTSC reference black level for consistent brightness/contrast across all sources.
- **7.5 IRE** : This will enhance the black level for increased brightness/contrast when viewing DVDs.

3D NR(Noise Reduction)
- **On** : Select to reduce noise from the screen
- **Off** : Normal

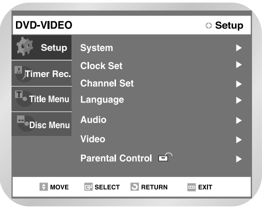
Setting Up the Parental Control

The Parental Control function works in conjunction with DVDs that have been assigned a rating - which helps you control the types of DVDs that your family watches. There are up to 8 rating levels on a disc.

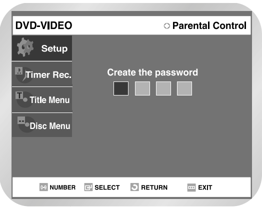
1 With the unit in Stop mode, press the MENU button on the remote.

2 Select Setup using ▲▼ buttons, then press the ► or ENTER button.

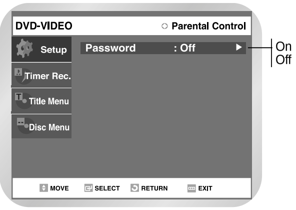
3 Select Parental control using ▲▼ buttons, then press the ► or ENTER button.

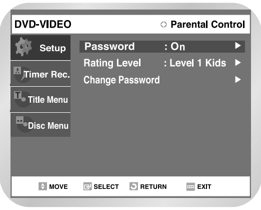

DVD-VIDEO
○ Setup
Setup
Timer Rec.
Title Menu
Disc Menu
System ►
Clock Set ►
Channel Set ►
Language ►
Audio ►
Video ►
Parental Control ►
MOVE
SELECT
RETURN
EXIT

4 Enter the 4-digit password using the 0 to 9 buttons on the remote.
- The 'Confirm the password.' message will be displayed. Enter your password again.

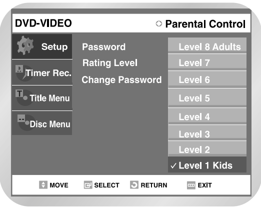

DVD-VIDEO
○ Parental Control
Setup
Timer Rec.
Title Menu
Disc Menu
Create the password
NUMBER
SELECT
RETURN
EXIT

5 Select Password ON/OFF using ► and ▲▼ buttons.


DVD-VIDEO
○ Parental Control
Setup
Timer Rec.
Title Menu
Disc Menu
Password : Off ►
On
Off
MOVE
SELECT
RETURN
EXIT


DVD-VIDEO
○ Parental Control
Setup
Timer Rec.
Title Menu
Disc Menu
Password : On ►
Rating Level : Level 1 Kids ►
Change Password ►
MOVE
SELECT
RETURN
EXIT

6 Select Rating Level you want using ▲▼ buttons, then press the ► or ENTER button.
- For example, if you select up to Level 6, discs that contain Level 7, 8 will not play. Larger number indicates the program is more intended to adult use only


DVD-VIDEO
○ Parental Control
Setup
Timer Rec.
Title Menu
Disc Menu
Password
Rating Level
Change Password
Level 8 Adults
Level 7
Level 6
Level 5
Level 4
Level 3
Level 2
✓Level 1 Kids
MOVE
SELECT
RETURN
EXIT

Note
- ■ Press the RETURN or ◄ button to return to the previous menu. Press the MENU button to exit the menu.
- ■ Refer to Troubleshooting if you forget your password.

About the Change Password;

1 Select Change Password using ▲▼ buttons, then press the ► or ENTER button.
- The 'Enter the password.' message will be displayed.

2 Enter the 4-digit password using the 0 to 9 buttons on the remote.
- The 'Confirm the password.' message will be displayed.

3 Enter your password again using the 0 to 9 buttons on the remote.

Note
- ■ Press the RETURN or ◄ button to return to the previous menu. Press the MENU button to exit the menu.

Auto Channel Memory

Auto Channel Memory will automatically seek and store all active channels in your area.

1 Open "MENU"

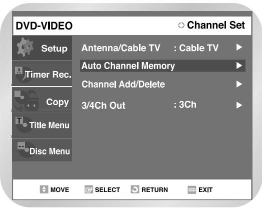
With the DVD in stop mode, press the MENU button.

2 Select "SETUP"

Using the ▲▼ buttons, move the selection bar to "Setup" then press ENTER to select.

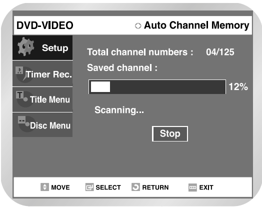
3 Select "Channel Set"

Using the ▲▼ buttons, move the selection bar to "Channel Set", then press ENTER to select.


DVD-VIDEO
○ Channel Set
Setup
Timer Rec.
Copy
Title Menu
Disc Menu
Antenna/Cable TV : Cable TV ►
Auto Channel Memory ►
Channel Add/Delete ►
3/4Ch Out : 3Ch ►
MOVE
SELECT
RETURN
EXIT

4 Run "Auto channel memory"

Move the selection arrow to "Auto Channel Memory," then press ENTER to select.
- The DVD Recorder-VCR will automatically search for all available channels in the selected Tuner Band. This procedure may take a few minutes to complete.
- When finished, the lowest channel found will be displayed.


DVD-VIDEO
○ Auto Channel Memory
Setup
Timer Rec.
Title Menu
Disc Menu
Total channel numbers : 04/125
Saved channel :
12%
Scanning...
Stop
MOVE
SELECT
RETURN
EXIT

•Press ENTER button to STOP or cancel scanning.

Channel Add/Delete

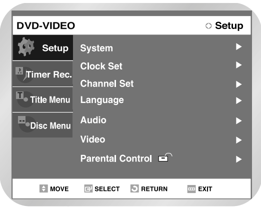
Use this feature if Auto Channel Search missed a channel that you would like to add and delete a channel you wish to remove.

1 Open "MENU"

With the DVD in stop mode, press the MENU button.

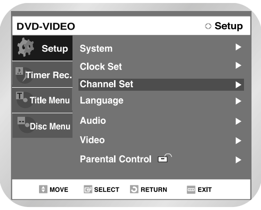
2 Select "Setup"

Using the ▲▼ buttons, move the selection bar to "Setup" then press ENTER to select.


DVD-VIDEO
○ Setup
Setup
Timer Rec.
Title Menu
Disc Menu
System
Clock Set
Channel Set
Language
Audio
Video
Parental Control
MOVE
SELECT
RETURN
EXIT

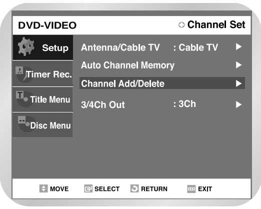
3 Select "Channel Set"

Using the ▲▼ buttons, move the selection bar to "Channel Set", then press Enter to select.


DVD-VIDEO
○ Setup
Setup
Timer Rec.
Title Menu
Disc Menu
System
Clock Set
Channel Set
Language
Audio
Video
Parental Control
MOVE
SELECT
RETURN
EXIT

4 Select "Channel Add/Delete"

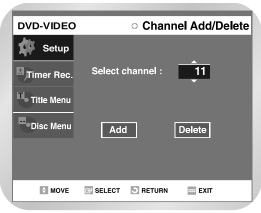
Move the selection bar to "Channel Add/Delete," then press ENTER to select.


DVD-VIDEO
○ Channel Set
Setup
Timer Rec.
Title Menu
Disc Menu
Channel Add/Delete
MOVE
SELECT
RETURN
EXIT

Antenna/Cable TV : Cable TV
Auto Channel Memory
3/4Ch Out : 3Ch

5 Select Channel to Add/Delete

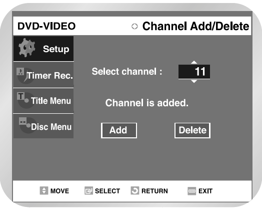
Use the CH ∧/∨ buttons to tune in the channel number you wish to add or delete.
Use the number buttons to move the channel directly. If you use the navigation ∧/∨ button, the channel will be moved to the next memorized channel.


DVD-VIDEO
○ Channel Add/Delete
Setup
Timer Rec.
Title Menu
Disc Menu
Add
Delete
MOVE
SELECT
RETURN
EXIT

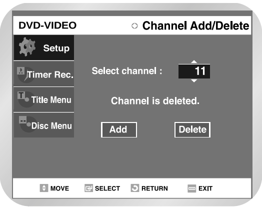
Select channel : 11

6 Add/Delete Channel.

Press Enter to move the cursor to select Add, then press ► if you want to select Delete. Press ENTER to confirm your selection.


DVD-VIDEO
○ Channel Add/Delete
Setup
Timer Rec.
Title Menu
Disc Menu
Add
Delete
MOVE
SELECT
RETURN
EXIT

Select channel : 11
Channel is added.


DVD-VIDEO
○ Channel Add/Delete
Setup
Timer Rec.
Title Menu
Disc Menu
Add
Delete
MOVE
SELECT
RETURN
EXIT

Select channel : 11
Channel is deleted.

RF Output Channel

When you connect the DVD Recorder-VCR to TV with RF Antenna Cable, follow the steps below to set the RF output channel.

1 Open "MENU"

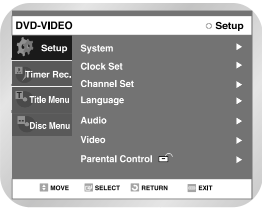
With the DVD in Stop or Play mode, press the MENU button.

2 Select "Setup"

Using the ▲▼ buttons, move the selection bar to "Setup" then press ENTER to select.

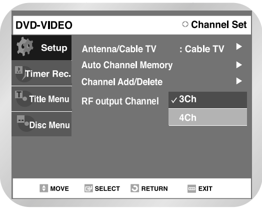
3 Select "Channel Set"

Using the ▲▼ buttons, move the selection bar to "Channel Set," then press ENTER to select.


DVD-VIDEO
○ Setup
Setup
Timer Rec.
Title Menu
Disc Menu
System
Clock Set
Channel Set
Language
Audio
Video
Parental Control
MOVE
SELECT
RETURN
EXIT

4 Select "RF Output Channel"

Move the selection bar to "RF output Channel", then press right to change.


DVD-VIDEO
○ Channel Set
Setup
Timer Rec.
Title Menu
Disc Menu
Auto Channel Memory
Channel Add/Delete
4Ch
MOVE
SELECT
RETURN
EXIT

Antenna/Cable TV : Cable TV
RF output Channel ✓3Ch

5 Change "RF Output CH"

Select channel 3 or 4 using the ▲▼ button. Then press ENTER to change.

6 Change "TV Channel"

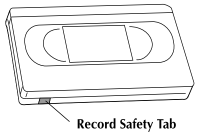
A message will appear on your TV. When the message disappears, change your TV to channel 3 or 4 to match the RF output channel of the player.

VCR Setting

If you want your videotapes to play automatically when you insert them, turn on Auto Play.

Note

- ■ Only tapes that are missing the Record Safety Tab will play automatically when inserted.

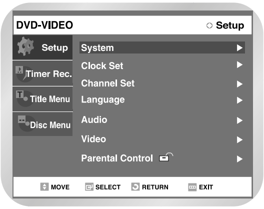

Record Safety Tab

1 Open “MENU”

With the VCR in Stop or Play mode, press the MENU button.

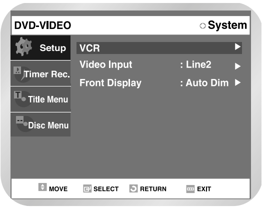
2 Select “System”

Use the ▲▼ buttons to highlight “System” then press the ENTER button.


DVD-VIDEO
○ Setup
Setup
Timer Rec.
Title Menu
Disc Menu
System ▶
Clock Set ▶
Channel Set ▶
Language ▶
Audio ▶
Video ▶
Parental Control ▶
MOVE
SELECT
RETURN
EXIT

3 Select “VCR”

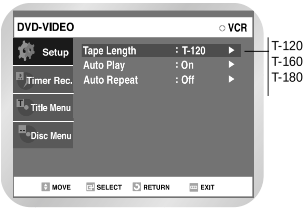
Using the ▲▼ buttons, move the selection bar to “VCR”, then press ENTER to select.


DVD-VIDEO
○ System
Setup
Timer Rec.
Title Menu
Disc Menu
VCR ▶
MOVE
SELECT
RETURN
EXIT

Video Input : Line2 ▶
Front Display : Auto Dim ▶

4 Select “Tape Length”

Press the RIGHT button to select the Tape Length. This information is usually printed on the tape box. The menu cycles through: T-120, T-160 or T-180. Once the type of cassette is set, the VCR can display the amount of time remaining on the tape when you press the INFO. button.

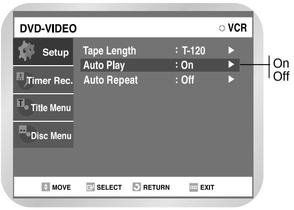

DVD-VIDEO
○ VCR
Setup
Timer Rec.
Title Menu
Disc Menu
MOVE
SELECT
RETURN
EXIT
T-120
T-160
T-180

Tape Length : T-120 ▶
Auto Play : On ▶
Auto Repeat : Off ▶

5 Select “Auto Play”

Move the selection bar to “Auto Play,” then press right button to select from the following options:

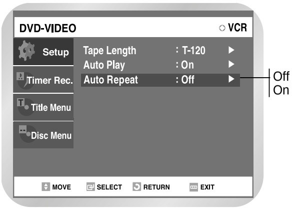
- On - The VCR will automatically begin playing a video tape when it is inserted, as long as the safety tab of the cassette has been removed.
- Off - Auto play is disabled.


DVD-VIDEO
○ VCR
Setup
Timer Rec.
Title Menu
Disc Menu
MOVE
SELECT
RETURN
EXIT
On
Off

Tape Length : T-120 ▶
Auto Play : On ▶
Auto Repeat : Off ▶

6 Select “Auto Repeat”

Move the selection bar to “ Auto Repeat”. It sets the VCR to play a tape repeatedly [unless a tape control is activated (Stop, Fast Forward or Rewind)].


DVD-VIDEO
○ VCR
Setup
Timer Rec.
Title Menu
Disc Menu
MOVE
SELECT
RETURN
EXIT
Off
On

Tape Length : T-120 ▶
Auto Play : On ▶
Auto Repeat : Off ▶

Video Input

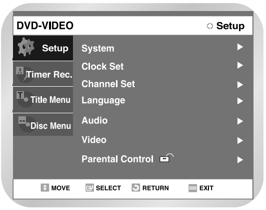
If you watch video through Line 2, you can choose Composite or Super(S)-video.

1 Open “MENU”

With the DVD Recorder-VCR in stop or play mode, press the MENU button.

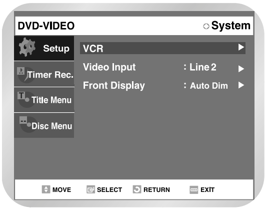
2 Select “Setup”

Using the ▲▼ buttons, move the selection bar to “Setup” then press ENTER to select.


DVD-VIDEO
○ Setup
Setup
Timer Rec.
Title Menu
Disc Menu
System ▶
Clock Set ▶
Channel Set ▶
Language ▶
Audio ▶
Video ▶
Parental Control ▶
MOVE
SELECT
RETURN
EXIT

3 Select “System”

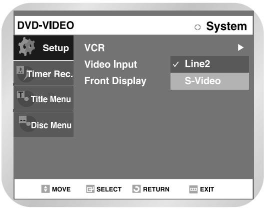
Use the ▲▼ buttons to highlight “System” then press the ENTER button.


DVD-VIDEO
○ System
Setup
Timer Rec.
Title Menu
Disc Menu
VCR ▶
MOVE
SELECT
RETURN
EXIT

Video Input : Line 2 ▶
Front Display : Auto Dim ▶

4 Select “Video Input”

Use the ▲▼ buttons to highlight “Video Input”, then press ENTER button and choose Line 2 (Composite) or S-Video.


DVD-VIDEO
○ System
Setup
Timer Rec.
Title Menu
Disc Menu
VCR ▶
Video Input
Front Display
✓ Line2
S-Video
MOVE
SELECT
RETURN
EXIT

Front Display

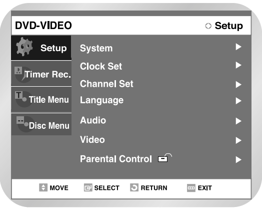
You can set the Front Panel Display to be bright all the time, dim all the time, dim during power off.

1 Open “ MENU”

With the DVD in Stop or Play mode, press the MENU button. .

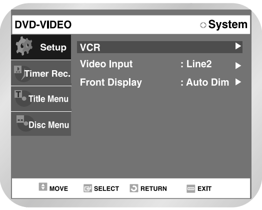
2 Select “Setup”

Using the ▲▼ buttons, move the selection bar to “Setup” then press ENTER to select.


DVD-VIDEO ○ Setup

3 Select “System ”

Using the ▲▼ buttons, move the selection bar to “System ” then press ENTER to select.


DVD-VIDEO ○ System

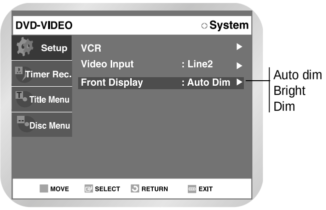
VCR

Video Input : Line2

Front Display : Auto Dim

4 Set “Front Display”

Move the selection bar to “Front Display,” then press RIGHT button to select from the following options:
- Auto dim – Front Panel Display will dim automatically during power off.
- Bright – Front Panel Display will be bright all the time.
- Dim – Front Panel Display will be dim all the time.


DVD-VIDEO ○ System

VCR

Video Input : Line2

Front Display : Auto Dim

Playback

This section introduces basic functions of playback by disc type.

DOLBY DIGITAL	dts	DIGITAL SOUND
Dolby Digital	DTS	Digital Audio
STEREO	NTSC	MP3 DIGITAL DISC PLAYBACK
Stereo	NTSC broadcast system in U.S.A, Canada, Korea, Japan,etc.	MP3

- *Before Playing* 39
- *Playing a Disc* 40
- *Using the Search & Skip Functions* . 42
- *Slow Motion Play / Step Motion Play* . . 42
- *About QUICK* 43
- *Repeat Play* 44
- *Using the A-B Repeat Function* 45
- *Moving to a scene directly* 45
- *Selecting the subtitle & audio language* . 46
- *Changing the camera angle* 47
- *Using the Bookmark* 48
- *Zooming-In* 49
- *Check Remaining Time* 50
- *Using the Disc and Top menu* 50
- *Playing Back an Audio CD (CDDA)* . 51
- *Play Option Mode* 52
- *To Program Tracks* 53
- *Picture CD Playback* 54
- *Playing back an MP3 CD* 55
- *Using PIP* 56
- *Playing a VHS tape* 57
- *Tracking* 57
- *Special VCR Playback Features* . . 58
- *S-VHS Playback* 58
- *Variable Search System* 59

Before Playing

Preliminary

Read the following information before playing a disc.

Region code (DVD-Video only)

1 ALL

Both the DVD Recorder-VCR and the discs are coded by region. These regional codes must match in order for the disc to play. If the codes do not match, the disc will not play. The Region Number for this DVD Recorder-VCR is described on the rear panel of the DVD Recorder-VCR.

Disc types that can be played

Disc Types	Disc Logo	Recorded content	Disc Shape	Max. Playing Time
DVD-VIDEO	DVD VIDEO	AUDIO + VIDEO	Single sided(5”)	about 240
			Double sided(5”)	about 480
			Single sided(3.5”)	about 80
			Double sided(3.5”)	about 160
AUDIO-CD	COMPACT disc DIGITAL AUDIO	AUDIO	Single sided(5”)	about 74
			Single sided(3.5”)	about 20
JPEG CD-R/RW		JPEG Images	Single sided(5”)	-
			Single sided(3.5”)	-
MP3 CD-R/RW		MP3 Audio	Single sided(5”)	-
			Single sided(3.5”)	-
DVD-RAM	DVD RAM	AUDIO + VIDEO	Single sided (5”) (4.7GB)	1(XP: Excellent Quality)
				2 (SP: Standard Quality)
				4 (LP: Long Playback)
				6 (EP: Extended)
			Double sided (5”) (9.4GB)	2 (XP: Excellent Quality)
				4 (SP: Standard Quality)
				8 (LP: Long Playback)
				12(EP: Extended)
DVD-RW	DVD RW	AUDIO + VIDEO	5” (4.7GB)	1 (XP: Excellent Quality)
				2 (SP: Standard Quality)
				4 (LP: Long Playback)
				6 (EP: Extended)
DVD-R	DVD R	AUDIO + VIDEO	5” (4.7GB)	1 (XP: Excellent Quality)
				2 (SP: Standard Quality)
				4 (LP: Long Playback)
				6 (EP: Extended)

- You cannot play discs other than those listed above.
- You canot play DVD-RAM discs or non-standardized discs. etc., even if they may be labeled as above.
- This DVD video player uses the NTSC color system and cannot play DVD video discs recorded in any other color system(PAL, SECAM, etc...)

Because of problems and errors that can occur during the creation of DVD software and/or the manufacture of DVD discs. Toshiba America Consumer Products. Inc.., Toshiba Hawaii, Inc, and Toshiba of Canaga, Ltd. cannot guarantee that this player will play every feature of every DVD technology, Toshiba DVD players are manufactured to the highest standards of quality and, as a result, such incompatibilities are very rare. If you happen to experience and difficulty playing a DVD on a Toshiba DVD player, please feel free to call our contact listed in “How to Obtain Warranty Services.”

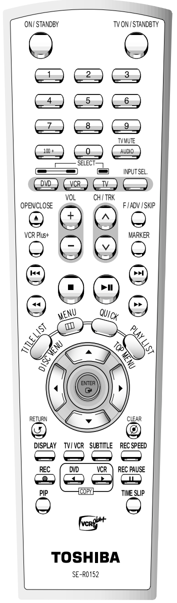
Discs that cannot be played

- DVD-Video with a region number other than “1” or “ALL”
- 3.9 GB DVD-R Disc for Authoring.
- DVD-RAM not recorded following the Video Recording Standard
- Unfinalized DVD-R recorded on other equipment.
- PAL discs
- DVD-ROM/DVD+RW/PD/MV-Disc/DiVX Video Disc, etc
- Video CD/CVD/SVCD/CD-ROM/CDV/CD-G/CD-I

Note

- This DVD Recorder-VCR can only operate with discs that are compatible with DVD-RAM Standard Version 2.0.
- Playback and/or recording may not work for some types of discs, or when specific operations, such as angle change and aspect ratio adjustment, are being performed. Information about the discs is written in detail on the box. Please refer to this if necessary
- Do not allow the disc to become dirty or scratched, Finger prints, dirt, dust, scratches or deposits of cigarette smoke on the recording surface may make it impossible to use the disc for recording.
- To protect a DVD-RAM disc from damage, use a cartridge.
- DVD-RAM/R/RW discs may not be able to play on some DVD players, depending on the player, disc and the condition of the recording.
- Discs with PAL programs recorded on them cannot be recorded using this product.

Playing a Disc



1 Press the OPEN/CLOSE button.

2 Place a disc gently into the tray with the disc’s label facing up.

3 **Press OPEN/CLOSE button to close the disc tray.**
- Your DVD Recorder-VCR closes the disc tray and plays the disc automatically.
- When a recordable media (DVD-RAM, DVD-RW, DVD-R, etc.) is used, Auto Playback cannot be activated without pressing the Play button. When pressing the Power button while a disc is in the tray, the unit will be activated. Press PLAY to start playback.
- If you insert MP3 Disc, your DVD Recorder-VCR will display the file list on the screen and start.
- When a JPEG disc is inserted, folders and a file list are displayed in the Album format.

4 Press the STOP button to stop playback.

Note

- When you stop disc play, the recorder remembers where you stopped, so when you press PLAY button again, it will pick up where you left off. (unless the disc is removed or the recorder is unplugged, or if you press the STOP button twice.) This function is only applicable to DVD-VIDEO, DVD-RAM, DVD-RW, DVD-R or audio CDs (CD-DA).

CAUTION

- Do not move your DVD Recorder-VCR while playing, as this may cause damage to the disc.
- Make sure to press the OPEN/CLOSE button to open or close the disc tray.
- Do not push the disc tray while it is being opened or closed, as this may cause a product malfunction.
- Do not place foreign materials on or in the disc tray.
- Some functions may perform differently or be disabled depending on the disc type. If this occurs, refer to the instructions written on the disc case.
- Be especially careful that children's fingers are not caught between the disc tray and the tray chassis when it closes.
- After turning power on, it will take a few seconds until the DVD operates.

Using the Search & Skip Functions

Searching through a Chapter or Track

During play, press the SEARCH ◀◀ or ▶▶ button on the remote control. The playback speed will change as follows.

DVD-VIDEO/ DVD-RAM/DVD-RW DVD-R	PLAY→FF1/FR1→FF2/FR2→FF3/FR3→FF4/FR4→FF5/FR5→FF6/FR6
AUDIO CD(CDDA)	PLAY→FF1/FR1→FF2/FR2→FF3/FR3

- You can scan the program in reverse order. To return to normal speed playback, press the ▶II button.

Skipping Chapters or Tracks

During play, press the |◀◀ or ▶▶| button on the remote control.

- **If you press the |◀◀ button**
  If you press the |◀◀ button, it moves to the beginning of the chapter or track. Pressing the button once again within 3 seconds returns to the beginning of the previous chapter or track.
- **If you press the ▶▶| button**
  If you press the ▶▶| button, it moves to the next chapter or track.

Skipping ahead 30 seconds

In play mode, press EADV/SKIP button to cue ahead exactly 30 seconds.

Slow Motion Play/ Step Motion Play

Slow Motion Play (DVD-VIDEO/DVD-RAM/DVD RW/ DVD-R)

During pause mode, press the SEARCH ◀◀ or ▶▶ button on the remote for more than 1 second.

- Each time you press the ▶▶ button :
  ▶▶ Slow X 1/8 →▶▶Slow X 1/4 →▶▶Slow X 1/2
- Each time you press the ◀◀ button :
  ◀◀ Slow X 1/8 →◀◀Slow X 1/4 →◀◀Slow X 1/2

To return to normal speed playback, press the ▶II button.

Step Motion Play (DVD-VIDEO/DVD-RAM/ DVD-RW/ DVD-R)

During pause mode, press the F.ADV button on the remote.

- Each time the button is pressed, a new frame will appear.

To return to normal speed playback, press the ▶II button.

Note

- No sound is heard during STEP or SLOW mode.

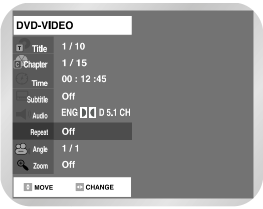
About QUICK

The QUICK functions allows you to easily search for a desired scene by accessing title, chapter, track and time. You can also change the subtitle and audio settings and set some features including Repeat, Angle and Zoom.

Press the QUICK button on the remote control during playback.

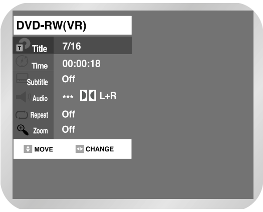
DVD-VIDEO

Title/Chapter/Time/Subtitle/Audio/Repeat/Angle/Zoom


DVD-VIDEO
Title 1 / 10
Chapter 1 / 15
Time 00 : 12 :45
Subtitle Off
Audio ENG D 5.1 CH
Repeat Off
Angle 1 / 1
Zoom Off
MOVE CHANGE

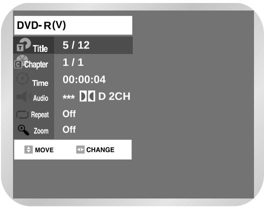
DVD-RAM/DVD-RW

Title/Time/Subtitle/Audio/Repeat/Zoom


DVD-RW(VR)
Title 7/16
Time 00:00:18
Subtitle Off
Audio *** L+R
Repeat Off
Zoom Off
MOVE CHANGE

DVD-R

Title/Chapter/Time/Audio/Repeat/Zoom


DVD- R(V)
Title 5 / 12
Chapter 1 / 1
Time 00:00:04
Audio *** D 2CH
Repeat Off
Zoom Off
MOVE CHANGE

Note

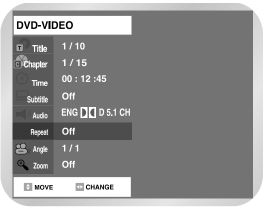
- **What's a track?**
  A track is usually a song on a Audio CD (CDDA) or MP3 disc.
- **What's a chapter?**
  A title on a DVD disc is usually divided into chapters.
- **What's a title?**
  A title means usually a film contained on a DVD disc.
- This may not work for some discs. When an audio CD(CD-DA) or a MP3 disc is inserted, depending on the type, the information display may not be appear.
- Regarding the DVD-Video mode, the Time Search function does not operate in some discs.
- To make the screen disappear, press the QUICK again.

Repeat Play

Using Repeat Play (For DVD-VIDEO/DVD-RAM/DVD-RW/DVD-R)

(DVD-VIDEO only supports chapter repeat.)

1 Press the QUICK button.



DVD-VIDEO
Title 1 / 10
Chapter 1 / 15
Time 00 : 12 :45
Subtitle Off
Audio ENG D 5.1 CH
Repeat Off
Angle 1 / 1
Zoom Off

2 Use ▲▼ buttons to select Repeat and use ► button to select the Title, Chapter or A-B you want to play repeatedly.

3 Press ENTER button.
Repeat play allows you to repeat title, chapter or A-B.

- To make the screen disappear, press the QUICK or RETURN button.

Using Repeat Play (For Audio CD/MP3)

1 Press the QUICK button during playback.
Repeat is highlighted.

2 Press ENTER button.

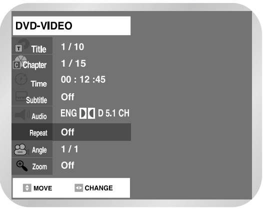
3 Press the ▲▼ button to select the Track or Disc you want to playback repeatedly. For MP3 discs, you can select Track, Folder or Disc.

4 Press ENTER button.
Repeat play allows you to repeat a track, folder or the entire disc.

Using the A-B Repeat Function

For DVD-VIDEO/DVD-RAM/ DVD-RW/DVD-R

1 Press the QUICK button during playback.



DVD-VIDEO
Title 1 / 10
Chapter 1 / 15
Time 00 : 12 :45
Subtitle Off
Audio ENG D 5.1 CH
Repeat Off
Angle 1 / 1
Zoom Off

2 Use ▲▼ to select Repeat and use ► button to select A-B.

3 Press ENTER button.

4 Press the ENTER button at the point where you want the repeat play to start (A) and then press the ENTER button at the point where you want the repeat play to Stop (B).

- Your DVD Recorder-VCR will playback the selected section repeatedly.

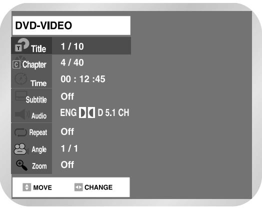
To return to normal playback

Select Off on the Repeat item or press the CLEAR button on the remote control.

Moving to a Scene Directly

You can find the desired scene easily using the QUICK function.

1 Press the QUICK button during playback.

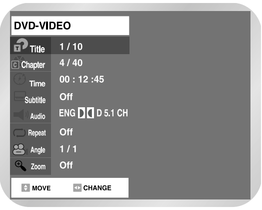


DVD-VIDEO
Title 1 / 10
Chapter 4 / 40
Time 00 : 12 :45
Subtitle Off
Audio ENG D 5.1 CH
Repeat Off
Angle 1 / 1
Zoom Off

2 Use ▲▼ to select the Title, Chapter or time you want to find the desired scene.

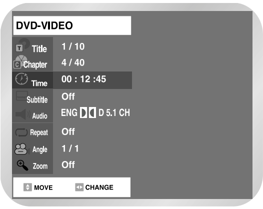
3 If you want to select a title or chapter, select it using the ◄► buttons. Then, press the ENTER button.

- You can enter the desired item directly using the number buttons.



DVD-VIDEO
Title 1 / 10
Chapter 4 / 40
Time 00 : 12 :45
Subtitle Off
Audio ENG D 5.1 CH
Repeat Off
Angle 1 / 1
Zoom Off

4 If you want to move to a desired time, enter the time in the sequence of hour, minute, and second using the number buttons and then press the ENTER button.


DVD-VIDEO
Title 1 / 10
Chapter 4 / 40
Time 00 : 12 :45
Subtitle Off
Audio ENG D 5.1 CH
Repeat Off
Angle 1 / 1
Zoom Off

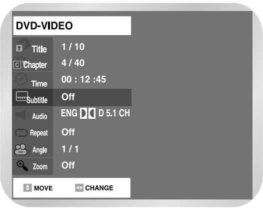
Selecting the Subtitle & Audio Language

Audio languages and subtitle languages may not work depending on disc type.

It is available during playback only.

Selecting the subtitle language

1 Press the QUICK button during playback.

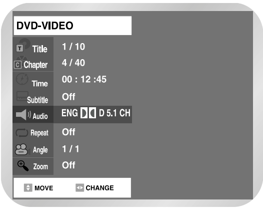

DVD-VIDEO
Title 1 / 10
Chapter 4 / 40
Time 00 : 12 :45
Subtitle Off
Audio ENG D 5.1 CH
Repeat Off
Angle 1 / 1
Zoom Off

2 Use ▲▼ to select Subtitle and use ◄► button to select the desired subtitle language.

- If a disc contains subtitles, you can select a desired subtitle language by pressing the ◄► buttons.
- Subtitle display may be different depending on disc type.
- DVD subtitles may overlap with your TVs subtitles. If this occurs, disable the caption function on your TV.
- Some discs allow you to select languages from the disc menu only.

Selecting the Audio language

1 Press the QUICK button during playback.


DVD-VIDEO
Title 1 / 10
Chapter 4 / 40
Time 00 : 12 :45
Subtitle Off
Audio ENG D 5.1 CH
Repeat Off
Angle 1 / 1
Zoom Off

2 Use ▲▼ to select Audio and use ◄► button to select the desired audio language.

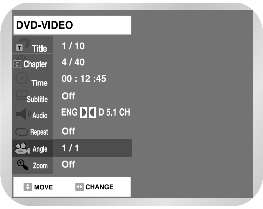
- Audio languages may be different because they are disc-specific.
- Some discs allow you to select languages from the disc menu only.

Changing the Camera Angle

When a DVD contains multiple angles of a particular scene, you can select the Angle function.

1 Press the QUICK button when the "Angle" is shown on the screen during playback.

2 Use ▲▼ to select Angle and use ◄► button to select the desired angle.


DVD-VIDEO
Title 1 / 10
Chapter 4 / 40
Time 00 : 12 :45
Subtitle Off
Audio ENG D 5.1 CH
Repeat Off
Angle 1 / 1
Zoom Off

Note

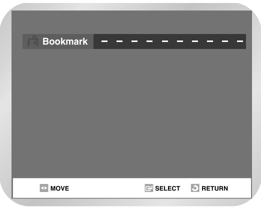
- ■ This function is disc-dependent, and may not work with all DVDs. This function does not work when a DVD has not been recorded with a multi-camera angle system.

Using Bookmarks

Set marks at scenes you want to see again so that you can start playback from the marked position.

Setting a book mark

1 Press the MARKER button during playback.



2 Press the ENTER button when the desired scene appears.

- The number 1 is displayed and the scene is memorized.

3 Press ► button to move to the next position.

4 Press the ENTER button again when the desired scene appears.

- The number 2 is displayed and the scene is memorized. Repeat above to bookmark other positions. You can bookmark up to 10 scenes.

Bookmarking with DVD-RAM/ DVD-RW(VR) disc

- The screen will display “Marker” in place of “Bookmark” if you are playing a DVD-RAM/DVD-RW(VR).
- Up to 99 scenes can be marked.
- If you press the ENTER button during playback, bookmarks are saved in the order of title.

Playing Back a Bookmark

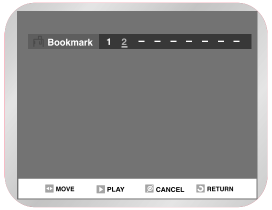
1 Press the MARKER button.

2 Press the ◄► buttons to select a bookmarked scene.

3 Press the ENTER button to start playing from the selected scene.

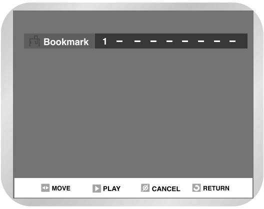
Clearing a Bookmark

1 Press the MARKER button.



2 Press ◄► buttons to select a marked scene you want to delete.

3 Press Clear button to delete the selected bookmark.

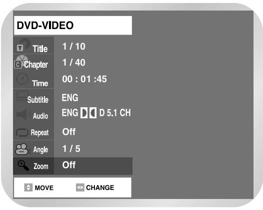


Note

- ■ When using a DVD-RAM/DVD-RW(VR) the last Marker number added will be deleted.

Zooming-In

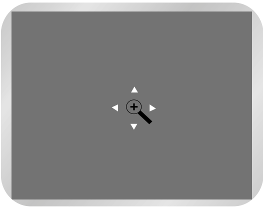
1 Press the QUICK button during playback.



Title 1 / 10
Chapter 1 / 40
Time 00 : 01 :45
Subtitle ENG
Audio ENG D 5.1 CH
Repeat Off
Angle 1 / 5
Zoom Off

2 Use ▲▼ buttons to select Zoom, and then press the ENTER button.

- 🔍 will be displayed.



3 Press ▲▼◄► buttons to move to the area you want to enlarge.

4 Press the ENTER button.

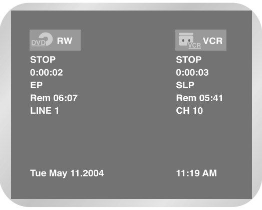
- The screen will be enlarged to twice the normal size.
- If you press the ENTER button again after the screen was enlarged to twice the normal size, the screen size will be enlarged to four times the normal size.

DVD-VIDEO/ DVD-RAM/DVD-RW/ DVD-R	normal size →2X →4X →2X →normal size

5 To return to the normal size, press the ENTER button repeatedly until the screen becomes of normal size.

Check Remaining Time

1 Press Info button on the remote control.
Following information will be displayed.
(Current deck status, recording speed, remaining time, input channel, current time.)



RW
STOP
0:00:02
EP
Rem 06:07
LINE 1

VCR
STOP
0:00:03
SLP
Rem 05:41
CH 10

Tue May 11.2004
11:19 AM

Using the Disc and Top Menu

Some type of discs contains a dedicated menu system that allows you to select special functions for title, chapter, audio track, subtitle, film preview, information on characters, etc.

For DVD-VIDEO disc

1 Press the DISC MENU button to enter the disc menu of the disc.

- Move to the setup menu related to playback operation.
- You can select audio language and subtitle etc. provided by the disc.

2 Press the TOP MENU button to move to the title menu of the disc.

- Use this button if the disc contains more than one title. Some discs may not support the title menu functionality.

For DVD-RAM/DVD-RW/ DVD-R disc

1 Press the TITLE LIST button to display title list.

Note

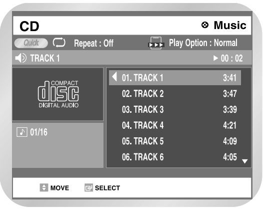
- ■ Title List : Title refers to a recorded video stream. Title List shows list to help you select a title. Since the title list consists of the information on stream that is actually recorded, if one title is deleted, that title cannot be played again.
- ■ Play List : This refers to a unit of playback, which is made by selecting a desired scene in the entire Title List. When one playlist is played, only the scene selected by the user will play and then stop. Since only the information necessary for playing a desired scene is included in a playlist, even if that playlist is deleted, the original data will not be deleted.

Playing Back an Audio CD (CDDA)

Each disc has a variety of menu functions available.

1 Insert an audio CD (CDDA) into the disc tray.

- The audio CD menu appears and the tracks (songs) are played back.



CD
Music
Repeat : Off
Play Option : Normal
TRACK 1
► 00 : 02
01/16

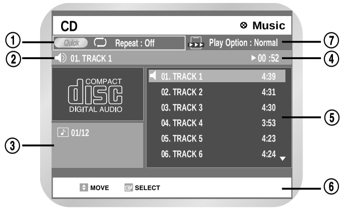
01. TRACK 1	3:41
02. TRACK 2	3:47
03. TRACK 3	3:39
04. TRACK 4	4:21
05. TRACK 5	4:09
06. TRACK 6	4:05

MOVE SELECT

2 Press ▲▼ buttons to select the track (song) to start playback from, and then press the ENTER button.

- You can also select the track (song) by pressing the number buttons on the remote.

Audio CD(CD-DA) Screen Elements



CD
Music
Repeat : Off
Play Option : Normal
01. TRACK 1
► 00 :52
01/12

01. TRACK 1	4:39
02. TRACK 2	4:31
03. TRACK 3	4:30
04. TRACK 4	3:53
05. TRACK 5	4:23
06. TRACK 6	4:24

MOVE SELECT

1. **Repeat mode**: Repeat off/Repeat Track/Repeat Disc.
2. **Current track (song)**: Displays the number of the track currently being played.
3. Displays the current play index and total track num-ber.
4. This shows the operating state of a disc and a playback time corresponding to a portion that is currently played.
5. Displays the track list (song list) and the playing time of each track.
6. Button display.
7. **Play Option**: Normal, Random, Intro or Playlist

Audio CD (CDDA) Screen Elements

1 ▲▼ : Select a track (song).

2 ► : Playback the selected track (song).

3 ENTER ( ) button: Playback the selected track (song).

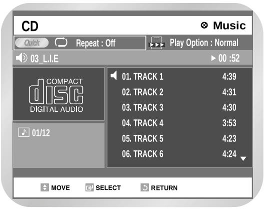
4 (⏭) button: Playback the next track.

5 (⏮) button: Returns to the beginning of the current track when pressed during playback.
If you press this button within three seconds after playback starts, the previous track will be played. If you press this button after three seconds,the current track will be replayed from the beginning.

6 Press and hold the (◄◄/ ►►) button: Fast Play (FF1/FR1, FF2/FR2, FF3/FR3)

Play Option Mode

1 Press the QUICK button during playback.
Repeat mode will be highlighted.

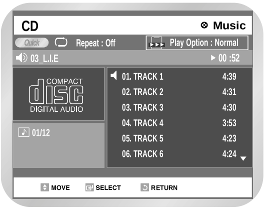


CD ⊗ Music
Quick Repeat : Off | Play Option : Normal
03_L.I.E ▶ 00 :52
COMPACT disc DIGITAL AUDIO
01/12
01. TRACK 1 4:39
02. TRACK 2 4:31
03. TRACK 3 4:30
04. TRACK 4 3:53
05. TRACK 5 4:23
06. TRACK 6 4:24
MOVE SELECT RETURN

- During Playback, repeat mode will be highlighted.
- During Stop, Play option will be highlighted.

2 Select Play Option Mode using the ◄► buttons and press the ENTER button.

- The play option screen will appear.

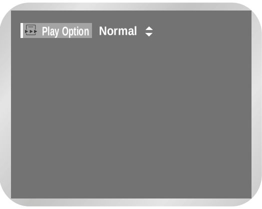


CD ⊗ Music
Quick Repeat : Off | Play Option : Normal
03_L.I.E ▶ 00 :52
COMPACT disc DIGITAL AUDIO
01/12
01. TRACK 1 4:39
02. TRACK 2 4:31
03. TRACK 3 4:30
04. TRACK 4 3:53
05. TRACK 5 4:23
06. TRACK 6 4:24
MOVE SELECT RETURN

3 Select a desired play option using the ▲▼ buttons and press the ENTER button.

- **Normal** : Tracks on a disc are played in the order in which they were recorded on the disc.
- **Random** : The Random option plays a disc's tracks in random order. After a random list is generated and played completely, another random list is generated and played. Ramdom Play continues until the play option is changed.
- **Intro** : The first 10 seconds of each track is played. If you press the ►II button during Intro play, Normal Play will be performed from the track currently playing. When Intro Play is completed, Normal Play is performed.
- **Playlist** : The Playlist playback option allows you to select the order in which you want tracks to play.

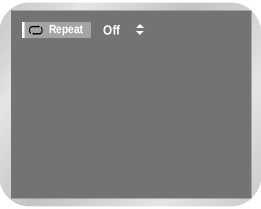
Note
■ The same can be used with a Mp3 disc.



Play Option Normal ⇕

To change repeat mode

1 Press QUICK during Play to highlight Repeat Mode.
Press ENTER when Repeat Mode is highlighted.
- A screen allowing you to change the repeat mode (Off, Disc, Track) will appear.

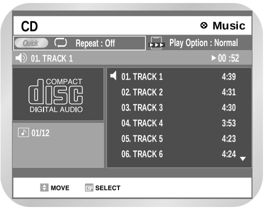


Repeat Off ⇕

To Program Tracks

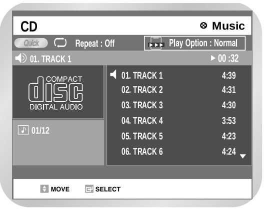
You can register a maximum 30 tracks in the playlist.

1 **Press the QUICK button.**
Repeat Mode will be highlighted.



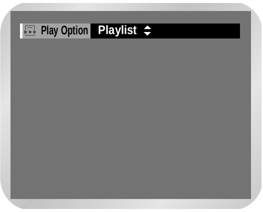
CD ⊗ Music
Quick Repeat : Off | Play Option : Normal
01. TRACK 1 ▶ 00 :52
COMPACT disc DIGITAL AUDIO
01/12
01. TRACK 1 4:39
02. TRACK 2 4:31
03. TRACK 3 4:30
04. TRACK 4 3:53
05. TRACK 5 4:23
06. TRACK 6 4:24
MOVE SELECT

2 Select Play Option using the ◄►buttons.



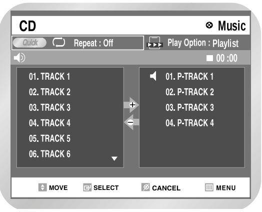
CD ⊗ Music
Quick Repeat : Off | Play Option : Normal
01. TRACK 1 ▶ 00 :32
COMPACT disc DIGITAL AUDIO
01/12
01. TRACK 1 4:39
02. TRACK 2 4:31
03. TRACK 3 4:30
04. TRACK 4 3:53
05. TRACK 5 4:23
06. TRACK 6 4:24
MOVE SELECT

3 Press the ENTER button.
The play option screen will appear.
Select Playlist using the ▲▼buttons.



Play Option Playlist ⇕

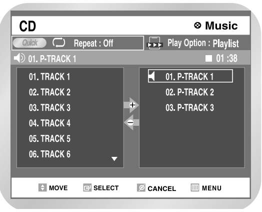
4 Press the ENTER button.
The Playlist screen will appear.
Select tracks in the order in which you want them to play using the▲▼buttons. Press the ENTER button.



CD ⊗ Music
Quick Repeat : Off | Play Option : Playlist
■ 00 :00
01. TRACK 1 | 01. P-TRACK 1
02. TRACK 2 | 02. P-TRACK 2
03. TRACK 3 | 03. P-TRACK 3
04. TRACK 4 | 04. P-TRACK 4
05. TRACK 5
06. TRACK 6
MOVE SELECT CANCEL MENU

Press the PLAY button to playback playlist.

5 If you playlisted a wrong track, select the wrong track using the ▲▼buttons and press the CLEAR button.
The wrong track will be removed.

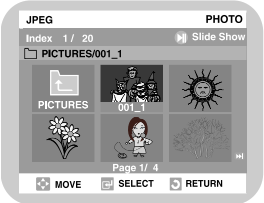


CD ⊗ Music
Quick Repeat : Off | Play Option : Playlist
01. P-TRACK 1 ■ 01 :38
01. TRACK 1 | 01. P-TRACK 1
02. TRACK 2 | 02. P-TRACK 2
03. TRACK 3 | 03. P-TRACK 3
04. TRACK 4
05. TRACK 5
06. TRACK 6
MOVE SELECT CANCEL MENU

Photo CD Playback

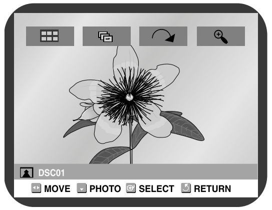
1 Insert a photo CD (JPEG) into the disc tray.

2 The screen shown below will appear automatically. (Press ▶II button to switch to slide show mode.)


JPEG
PHOTO
Index 1 / 20
Slide Show
PICTURES/001_1
PICTURES
001_1
Page 1/ 4
MOVE
SELECT
RETURN

To see the next 6 pictures, press the ⏭ button.
To see the previous 6 pictures, press the ⏮ button.

3 Select Photo using ▲▼ buttons, then press the ENTER button.


DSC01
MOVE
PHOTO
SELECT
RETURN

4 Use the ◀▶ buttons to select clips menu and then press the ENTER button.

- ▦ : Returns to the Album screen.
- ⧉ : The unit enters slide show mode. Before the slide show can begin, the photo interval (slide show speed) must be set
- ↷ : Each title the ENTER button is speed, the picture rotates 90 degree clockwise.
- 🔍 : Each time ENTER button is pressed, the photo is enlarged up to 4X. (Normal →2X →4X →2X →Normal)

When using a combination MP3/JPEG disc

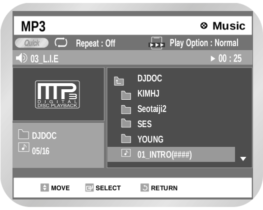
1 If you want to listen to MP3 files, but you're currently in Photo mode, press STOP button twice and then press MENU button to bring up the Menu screen.

2 Select Music using the ▲▼ buttons then press the ▶ or ENTER button. MP3 screen will be shown.

Playing back an MP3 CD

1 Insert an MP3 CD into the disc tray.

- The MP3 menu is displayed and the tracks (songs) are played back.


MP3
Music
Quick
Repeat : Off
Play Option : Normal
03_L.I.E
▶ 00 : 25
DJDOC
KIMHJ
Seotaiji2
SES
YOUNG
01_INTRO(####)
DJDOC
05/16
MOVE
SELECT
RETURN

2 Press the ▲▼ buttons to select the folder you want to hear, and then press the ENTER button.

- Press the ▲▼ buttons to select the track (song) you want to hear, and then press the ENTER button.
- You can also select the desired track (song) by pressing the number buttons on the remote.

Buttons on the Remote

1 ▲▼ : Selects a track (song).

2 ▶ : Playback the selected track (song).

3 ENTER (↵) button:
Playbacks the selected track (song) or displays the files in the selected folder.

4 RETURN (↶) button:
Moves to the parent of the folder to which the current song belongs.

5 (⏭) button: Playbacks the next track.

6 (⏮) button: Returns to the beginning of the current track when it is pressed during playback. If it is pressed again, your DVD Recorder-VCR plays back the previous track.

When using a combination MP3/JPEG disc

1 If you want to watch Photo files, but you're currently in MP3 mode, press STOP button twice and then press MENU button to bring up the Menu screen.

2 Select Photo using the ▲▼ buttons then press the ▶ or ENTER button. Photo screen will be shown.

Using PIP

The PIP function allows you to view a sub screen together with the main screen in DVD mode.

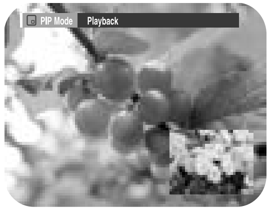
You can watch both DVD and TV together.

Note

- ■ PIP does not work in VCR mode.

1 Press the PIP button.

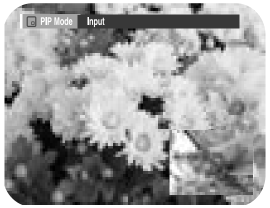
- The current disc is played back on the PIP screen located at the bottom of the screen.



Switching between the PIP and main screens

1 Press the PIP button again.

- The main and PIP screen will be switched.



Deactivating PIP

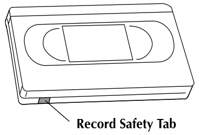
1 Press the PIP button again.

- PIP will be deactivated.

PIP Mode
Off

Playing the VCR

To play a standard VHS videotape, just insert it into the VCR deck and press the PLAY button. You can turn on the Auto Play to enable the VCR deck to play automatically when you insert a videotape that is missing the Record Safety Tab. See pages 36~37.



1 Insert VHS Tape

Insert a standard VHS videotape into the VCR deck.

- When a videotape is inserted, power will turn on automatically.

2 Play Tape

Press the ►II(PLAY/PAUSE) button on the remote control or on the front panel of the unit. The videotape will begin to play automatically if it is missing the Record Safety Tab and Auto Play is turned on. See pages 36~37.

3 Stop Playback

Press the ■(STOP) button on the remote control or on the front panel of the unit.

Tracking

The Tracking adjustment removes almost the white lines that sometimes appear during playback because of slight differences in recording decks. The TRK button will automatically align the recorded tracks with the playback heads to solve this problem. You may also set tracking manually.

1 Adjust Tracking Manually

During playback, press the CH/TRK ∧/∨ buttons to remove white lines from the picture.

Special VCR Playback Features

While a videotape is playing, you can enjoy a variety of special playback features, including Still, Frame Advance, Skip, Slow motion, and more. Press the Play button again to resume normal playback.

1 Pause

In Play mode, press ▶II(PLAY/PAUSE) to still a single frame.

2 Frame Advance

In the pause mode, press F.ADV/SKIP to advance to the next frame.

3 Fps/Review

In Play mode, press Forward (▶▶) or Rewind (◀◀) to Cue/review at two speeds:

- Picture Search — Press and release to advance the tape forward or backward at 5 times normal speed.
- Jet Search — Press and hold to advance the tape forward or backward at 7 times normal speed.

4 Skip

In Play mode, press F.ADV/SKIP to cue ahead exactly 30 seconds. Press F.ADV/SKIP repeatedly up to 4 times to cue ahead 2 minutes.

5 Slow motion

In pause mode, press ▶▶ button for slow motion. Press the press ▶▶ button repeatedly to vary slow motion speed from 1/5 to 1/30 of normal playback. Press the PLAY button twice to resume normal viewing.

S-VHS Playback

The DVD Recorder-VCR allows you to playback high quality S-VHS tapes.

1 Insert a S-VHS Tape

Insert an S-VHS tape into the VCR deck.

2 Start Playback

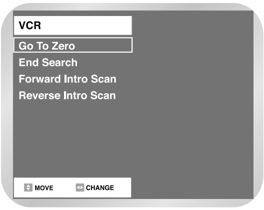
Press ▶II(PLAY/PAUSE) on the remote control to begin playback of the S-VHS tape.

Variable Search System

Press the QUICK button to display the search screen in the stop mode. When a program is recorded, the starting point is given an Index mark for easy location. However, the VHS Index Search System (VISS) cannot recognize index marks made by old VCRs. If the VCR has trouble finding a mark, it is probably because the cassette was recorded on a VCR without VISS. If you want to index two programs in a row, set your VCR to stop, then start recording each program.

1 Go to [0:00:00] stop

Use this feature when you want to search for the [0:00:00] counter position on a cassette. Press the CLEAR button at the point on the tape where you want to set the counter to [0:00:00].
While a cassette is stopped, press the QUICK button. The VCR will rewind or fast forward, searching for the [0:00:00] counter position, and then automatically stop at that position.



2 End search

Use this feature when you want to search for a blank position to record a program on a cassette. While a cassette is stopped, press the QUICK button. The VCR will fast forward, searching for a blank position, and then automatically stop at that position. If the VCR reaches the end of the tape during end search, the tape will be ejected.

3 Scan and play

Use scan and play when you don't know exactly where a program is located on a cassette tape.

- **Forward Intro Scan**
  Highlight "Forward Intro Scan", then press the ENTER button.
- **Reverse Intro Scan**
  Highlight "Reverse Intro Scan", then press the ENTER button.

Recording

This section shows various DVD recording methods.

- *Before Recording* 60
- *Recording the current channel you are watching* 62
- *Marking a One Touch Recording (OTR)* 64
- *VCR Plus+* 63
- *Making a Timer Recording* 64
- *Editing Timer Record List* 66
- *Deleting a Timer Recording Entry* . . 67
- *Watching the Images Being Recorded (Time Slip)* 68
- *Recording From Other External Devices* 68
- *Recording through the DV Input Jack* . . 69
- *Basic VCR Recording* 69
- *Special Recording Features* 70
- *Record Speed* 70
- *Copy to DVD or VCR* 71

Before Recording

Preliminary

This unit can record on various types of discs. Before recording, read the following instructions and select the disc type according to your preference.

Recordable discs

This recorder can record on the following discs.

DVD-RAM	DVD-RW	DVD-R
DVD RAM	DVD RW	DVD R

•DVD-RWs and DVD-RAMs are rewritable.
•DVD-Rs are non-rewritable.

This can be due, among other reasons, to problems and errors that can occur during the creation or recording of DVD and other software and the manufacture of software discs (including blank discs).
Moreover, because of variations in the quality of discs, this recorder may not be able to record on all discs that bear a DVD-RAM, DVD-R or DVD-RW logo, but you should not encounter difficulty if you use only high quality recordable DVD discs.
If you happen to encounter difficulties playing or recording a DVD disc of playing a CD disc, please feel free to call our Customer Service Hotline at 1-800-319-6684.

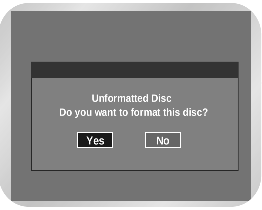
Compatibility between the DVD Recorder-VCR and Other Company's Recorder.

Disc Types	Recording format	Recording Device	Finalizing	Additional Recording in the DVD Recorder-VCR
DVD-RAM	VR Mode	Toshiba	X	Recordable
		Other Company	X	Recordable
DVD-RW	VR Mode	Toshiba	finalized	Not recordable
			not finalized	Recordable
		Other Company	finalized	Not recordable
			not finalized	Recordable
	V Mode	Toshiba	finalized	Not recordable
			not finalized	Recordable
		Other Company	finalized	Not recordable
			not finalized	Not recordable
DVD-R	V Mode	Toshiba	finalized	Not recordable
			not finalized	Recordable
		Other Company	finalized	Not recordable
			not finalized	Not recordable

Note
- ■ Finalize
  - This closes the DVD-R/RW so no additional recording can be done.
- ■ Unfinalize
  - This allows additional recording on a finalized DVD-RW disc.
  - A DVD-RW disc that has been recorded by DAO in a PC cannot be unfinalized.
  - A DVD-RW disc that has been recorded in Video Mode of a different maker's recorder cannot be unfinalized.
  - A DVD-R disc cannot be unfinalized.

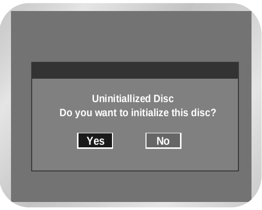
Recording Formats

When you insert an unused disc, the following message appears. Since available functions differ depending on the disc type, select a disc that best fits your preferences.
DVD-RAM: Use after formatting the disc.

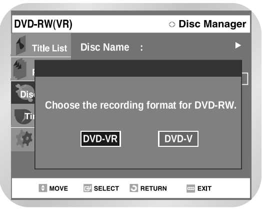


Unformatted Disc
Do you want to format this disc?

DVD-RW: When unused DVD-RW disc is first inserted, the message "Do you want to intialize this disc" will be displayed. If you select Yes, the disc will be formatted in VR mode. If you want to change the mode, refer to Formatting a Disc on page 91.



Uninitiallized Disc
Do you want to initialize this disc?



Choose the recording format for DVD-RW.

DVD-R: Formatting DVD is unnecessary and only Video Mode Recording is supported.

DVD-RW(Video mode)/-R

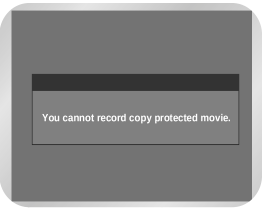
- This mode automatically creates chapters at specified intervals during finalization.
- Simple editing (erasing titles/changing title name).

DVD-RW(VR mode)/-RAM

- This mode involves multiple editing functions (such as deletion of a whole title, partial deletion of a title, etc.).
- Various editing options using a created Playlist.

Unrecordable pictures

Pictures with copy protection cannot be recorded on this DVD Recorder-VCR.
When the DVD Recorder-VCR receives a copy guard signal while recording, recording stops and the following message appears on the screen.



You cannot record copy protected movie.

Concerning copy control signals.

Broadcasts that contain copy control signals may have one of the following three signal types, Copy-Free, Copy-Once and Copy-Never. If you want to record a copy-once type program, use DVD-RW with CPRM in VR Mode and DVD-RAM.

	Copy-Free	Copy-Once	Copy-Never
DVD-RW(Ver.1.1)	Yes	No	
DVD-RW(Ver.1.1) with CPRM			
VR mode	Yes	Yes*	
Video mode	Yes	No	
DVD-R(Ver.2.0)	Yes	No	
DVD-RAM	Yes	Yes	

Once "Copy Once" has been recorded, additional recording cannot be performed.

Recording the current channel you are watching

DVD-RAM DVD-RW DVD-R

Preliminary

1. Check the antenna cable is connected.
2. Check the remaining time of disc.

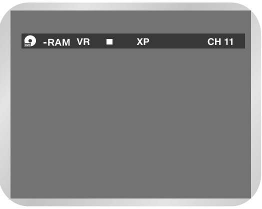
DVD-RAM/DVD-RW/DVD-R discs should be formatted in advance before beginning recording. Most new discs are sold unformatted. Make sure to format your unformatted discs before recording.

1 Press the OPEN/CLOSE button and place a recordable disc on the disc tray.

2 Press the CHANNEL ▲▼ button to select the channel you want to record.

3 Press the REC Speed button on remote control, to select the recording speed (quality).

- XP(High, approx. 1 hour) →SP(Standard, approx. 2 hours) →LP(Low, approx. 4 hours) EP(Extended Play, approx 6 hours)


-RAM VR ■ XP CH 11

4 Press the REC button.

- ●/■ is displayed on the screen and recording begins.

5 Press the STOP button to stop or finish a recording in progress.

- The message “Updating the information of disc. Please wait for a moment”.

Pausing / Resuming

- Press the REC PAUSE button to pause a recording in progress.
- Press the REC PAUSE button again during pause to resume recording.
- You can switch channels by pressing the CH ∨/∧ buttons while recording pauses.

Note

- ■ You can't change the recording mode and channel during recording.
- ■ Recording will stop automatically if there is not enough space for recording.
- ■ Up to 99 titles can be recorded onto a disc.
- ■ If the power interrupted due to power failure or other reasons, the title being recorded will not be saved onto the disc.
- ■ Recording will stop automatically if a copy protected image is input.
- ■ Do not use DVD-R authoring discs with this unit.

Making One Touch Recording (OTR)

DVD-RAM DVD-RW DVD-R

One-Touch Recording (OTR) allows you to add recording time in 30-minute increments up to 4 hours at the touch of a button.

1 Insert the disc.

Use the channel ▲▼ button or number buttons to select the channel to record.

- CATV channel: 1 to 125
- TV channel: 2 to 69

2 Start Recording.

Follow the instructions on page 62 to begin recording.

3 Activate OTR.

While in Record mode, press the REC button again to activate One-Touch Recording (OTR).

- Record length 0:30 appears on the On-Screen Display and the DVD Recorder-VCR will record for exactly 30 minutes.

4 Add Recording Time.

Continue pressing REC to add recording time in 30 minute increments up to 4 hours.

- The DVD Recorder-VCR stops recording automatically when the time has elapsed.

VCR Plus+ Record

DVD-RAM DVD-RW DVD-R

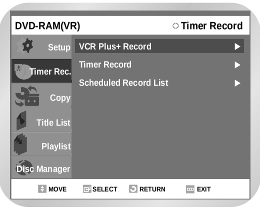
Preliminary

1. Check the antenna cable is connected.
2. Check the remaining time of the disc.
3. Check the date and time are correct.

Make sure the Clock has been set (Setup - System Setting) before you proceed with a timer recording.

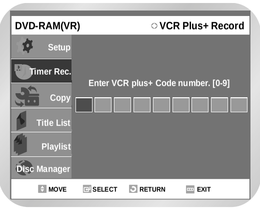
1 Press the MENU button.

- Press the ▲▼ buttons to select Timer Rec and then press the ENTER or ▶ button.
- Select VCR Plus+ Record

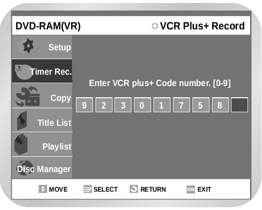

DVD-RAM(VR)
○ Timer Record
Setup
Timer Rec.
Copy
Title List
Playlist
Disc Manager
VCR Plus+ Record ▶
Timer Record ▶
Scheduled Record List ▶
MOVE
SELECT
RETURN
EXIT

- If the current time is not set. Set the current time first.

2 Enter VCR Plus+ Code number.


DVD-RAM(VR)
○ VCR Plus+ Record
Setup
Timer Rec.
Copy
Title List
Playlist
Disc Manager
MOVE
SELECT
RETURN
EXIT

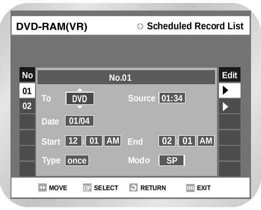
Enter VCR plus+ Code number. [0-9]


DVD-RAM(VR)
○ VCR Plus+ Record
Setup
Timer Rec.
Copy
Title List
Playlist
Disc Manager
MOVE
SELECT
RETURN
EXIT

Enter VCR plus+ Code number. [0-9]

9 2 3 0 1 7 5 8

3 • The Timer Recording screen is displayed.
If you enter VCR Plus+ Code number correctly., all recording informations will be set automatically.



DVD-RAM(VR) ○ Scheduled Record List

No.01

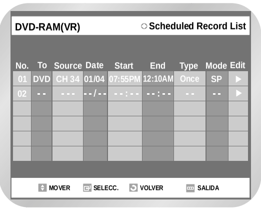
To DVD Source 01:34

Date 01/04

Start 12 : 01 AM End 02 : 01 AM

Type once Modo SP

4 After check if all record information is right, press ENTER button.



DVD-RAM(VR) ○ Scheduled Record List

No.	To	Source	Date	Start	End	Type	Mode	Edit
01	DVD	CH 34	01/04	07:55PM	12:10AM	Once	SP	▶
02	- -	- - -	- - / - -	- - : - -	- - : - -	- -	- -	▶

Making a Timer Recording

DVD-RAM DVD-RW DVD-R

Preliminary

1. Check the antenna cable is connected.
2. Check the remaining time of the disc.
3. Check the date and time are correct.

Make sure the Clock has been set (Setup - System Setting) before you proceed with a timer recording.

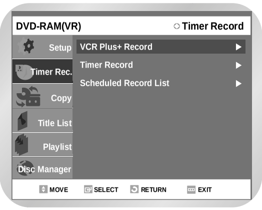
1 Press the TIMER REC button.

- Scheduled Record List screen is displayed.

Using the MENU button:

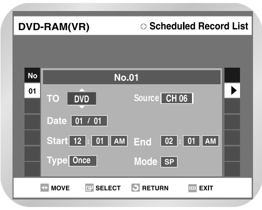
① Press the MENU button.
② Press the▲▼ buttons to select Timer Rec., and then press the ENTER or ▶ button.
③ Select Timer record.

- If the current time is not set. Set the current time first.



DVD-RAM(VR) ○ Timer Record

Using the TIMER REC button



DVD-RAM(VR) ○ Scheduled Record List

No.01

TO DVD Source CH 06

Date 01 / 01

Start 12 : 01 AM End 02 : 01 AM

Type Once Mode SP

2 Set timer recording option.

- The Timer Recording screen is displayed. Fill the input items using the arrow buttons.

◀ ▶: Moves to the previous/next item,
▲ ▼: Sets a value.

- **TO** : Select the media to record DVD or VCR.
- **SOURCE** : The video input source (L1 or L2), or the broadcasting channel you want to make a timer recording from.
- **Date** : Set the recording day.
- **Start/End Time** : Start and end time of the timer recording.
- **Type** (Recording cycle).
  Once : Records once.
  Weekly : Records at a set time every week.
  Daily : Records at a set time every day.
- **Mode** (Recording mode).

DVD

AUTO : Select when you want to set video quality automatically. It depends on the remaining time on the DVD.

XP (high quality) : Select when audio and video qualities are important. (Approx. 1 hour)

SP (standard quality) : Select to record in standard quality. (Approx. 2 hours)

LP (low quality) : Select when a long recording time is required.(Approx. 4 hours)

EP (extended mode) : Select when a longer recording time is required. (Approx.6 hours about 1.2 Mbps)

VCR

AUTO : Select when you want to set video quality automatically. It depends on remaining time of VCR tape.

SP : Standard Play, for best picture quality and for long preservation.

SLP : Super Long Play, for maximum recording time (3 times SP).

3 Press the ENTER button.

- ◷ will appear on the front panel. It means that a timer recording is registered.

If you make a mistake
Press the ◀ ▶ button to select the item you want to change.

If the timer settings overlap
The programs are recorded in order of priority. If timer recording is set for the first program and then again for the second program and both programs overlap, the following message will appear on the screen: "This setting is identical with 1"
The message shows that the first program has priority. After recording of the first program is complete, the second program starts being recorded.

To exit without saving the current setting
Press the MENU or TIMER REC button.

To return to the previous menu
Press the RETURN button if you don't want to set a timer recording.

4 Turn the power off to finish the timer recording.

- ◷ will blink if disc or tape is not inserted.

Note

■ The timer recording time may differ from the set time depending on disc status and overall timer recording status (for example, recording times overlapping, or when the previous recording ends within 2 minutes before the start time of the next recording.)

Editing Timer Record List

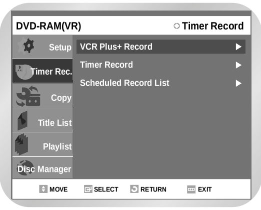
DVD-RAM DVD-RW DVD-R

Follow these directions to edit the timer record list.

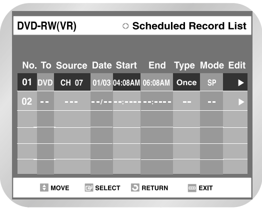
Editing the settings for a timer recording

1 Press the MENU button.

2 Press the ▲▼ button to select Timer Rec., and then press the ENTER or ▶ button.


DVD-RAM(VR)
○ Timer Record
Setup
Timer Rec.
Copy
Title List
Playlist
Disc Manager
VCR Plus+ Record ▶
Timer Record ▶
Scheduled Record List ▶
MOVE
SELECT
RETURN
EXIT

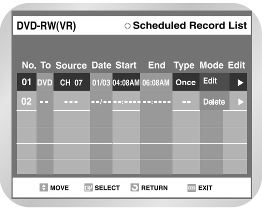
3 Press the ▲▼ button to select scheduled Record List, and then press the ENTER or ▶ button.


DVD-RW(VR)
○ Scheduled Record List
MOVE
SELECT
RETURN
EXIT

No.	To	Source	Date	Start	End	Type	Mode	Edit
01	DVD	CH 07	01/03	04:08AM	06:08AM	Once	SP	▶
02	--	---	--/--	--:----	--:----	--	--	▶

4 Press the ▲▼ button to select the number of the timer recording you want to edit, and then press the ENTER or ▶ button.

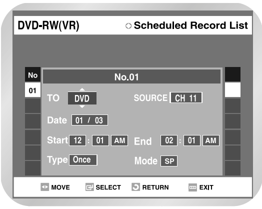
- The Edit and Delete items are displayed.


DVD-RW(VR)
○ Scheduled Record List
Edit
Delete
MOVE
SELECT
RETURN
EXIT

No.	To	Source	Date	Start	End	Type	Mode	Edit
01	DVD	CH 07	01/03	04:08AM	06:08AM	Once	Edit	▶
02	--	---	--/--	--:----	--:----	--	Delete	▶

5 Press the ▲▼ button to select Edit, and then press the ENTER button.

- The Timer Recording screen is displayed.
  Edit the items you want to modify. See the Timer Recording section for more information on Timer Recording Input items.


DVD-RW(VR)
○ Scheduled Record List
No
01
No.01
MOVE
SELECT
RETURN
EXIT

TO DVD SOURCE CH 11
Date 01 / 03
Start 12 : 01 AM End 02 : 01 AM
Type Once Mode SP

6 Press the ENTER button to confirm the edited setting.

Deleting a Timer Recording Entry

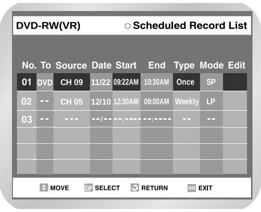
DVD-RAM DVD-RW DVD-R

Follow these directions to delete an entry from the timer record list.

1 Press the MENU button.

2 Press the ▲▼ button to select Timer Rec., and then press the ENTER or ▶ button.

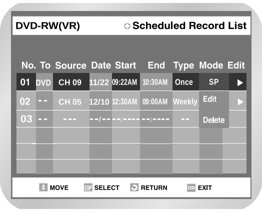
3 Press the ▲▼ button to select scheduled Record List, and then press the ENTER or ▶ button.


DVD-RW(VR)
○ Scheduled Record List
MOVE
SELECT
RETURN
EXIT

No.	To	Source	Date	Start	End	Type	Mode	Edit
01	DVD	CH 09	11/22	09:22AM	10:30AM	Once	SP	
02	--	CH 05	12/10	12:30AM	09:00AM	Weekly	LP	
03	--	---	--/--	--:----	--:----	--	--	

4 Press the ▲▼ button to select the number of the timer recording you want to delete, and then press the ENTER button.

- The Edit and Delete items are displayed.


DVD-RW(VR)
○ Scheduled Record List
Edit
Delete
MOVE
SELECT
RETURN
EXIT

No.	To	Source	Date	Start	End	Type	Mode	Edit
01	DVD	CH 09	11/22	09:22AM	10:30AM	Once	SP	▶
02	--	CH 05	12/10	12:30AM	09:00AM	Weekly	Edit	▶
03	--	---	--/--	--:----	--:----	--	Delete	

5 Press the ▲▼ button to select Delete, and then press the ENTER button.

- You will be prompted with the delete confirm message such as 'Do you want to delete No.02?'.

6 Press the ◀▶ buttons to select Yes, and then press the ENTER button.

- The selected entry will be deleted from the list.

7 Press the MENU button after finishing the operation. The menu screen will disappear.

Watching the Images Being Recorded (Time Slip)

DVD-RAM

This function allows you to watch the recently recorded 10-second images on the PIP screen while a recording is in progress.

1 Press the TIME SLIP button on the remote control.
- The recently recorded 10-second images are played back on the PIP screen.
- This function starts to operate 10 seconds from the time you press the REC button.
- On the TIME SLIP screen, you can playback, scan, or perform other operations for the recorded program using the playback related buttons.
  Press the ◀◀ button to scan the recording in the reverse order, from the end to the start.
  Press the ▶▶ button to scan to the recently recorded 10- second images.

2 Press the STOP button once to clear the TIME SLIP function.
- To stop a recording while a TIME SLIP function is in progress, press the STOP button twice.

! Note
- ■ The Time Slip feature only works with DVD-RAM discs.

Recording From External Devices

Follow these directions to record onto a disc or a tape from External Devices.

1 Connect the Line out jack of your External Devices to the Line IN jack on the front or rear of your DVD Recorder-VCR using Audio/Video Cable.

2 Power on your DVD Recorder-VCR and switch to Line In mode by pressing the INPUT SEL on the remote .
The front panel display changes on the following sequence
↱ Channel Number → L1 → L2→ DV ↲

3 When your DVD Recorder-VCR is in the stop state, set the operation mode of your External Devices to play mode.

4 Press the REC button on your DVD Recorder-VCR when the image from which you want to start recording is displayed.

5 Press the STOP button on your DVD Recorder-VCR when the recording is finished.

Note
- ■ Also refer to the user manual for your External Devices when recording through Line In mode using Audio/Video cable.

Recording through a DV jack

Follow these directions to record onto a disc or tape the outputs of a camcorder that has a DV output jack.

1 Connect the DV output jack of your camcorder to the DV input jack on the front of your DVD Recorder-VCR using a DV cable.

2 Power on your DVD Recorder-VCR and switch to DV mode by pressing the INPUT SEL. on the remote. Insert the disc.

3 With your DVD Recorder-VCR stopped, set the operation mode of your camcorder to play mode.

4 Press the REC button on your DVD Recorder-VCR when the image from which you want to start recording is displayed.

5 Press the STOP button on your DVD Recorder-VCR when the recording is finished.

Note
- ■ Some camcorders may not work with your DVD Recorder-VCR even if they have a DV output jack.
- ■ Also refer to the user manual for your camcorder when recording through a DV jack.

Basic VCR Recording

Preliminary

Before starting
1. Check TV channel and Antenna connections.
2. Check the remaining time on the tape.

You can record a TV show in progress by inserting a blank tape and pressing the ●(REC) button. You can even add time in 30-minute increments up to 4 hours by pressing the ●(REC)button repeatedly; see page 63.

Note
- ■ Be sure your videotape has a Record Safety Tab. If the tab is missing, you can cover the opening with a small piece of tape. Do not cover this opening unless you are sure you want to record over the tape.

1 Insert Tape

Insert a blank VHS tape into the VCR deck.
- Make sure the tape is long enough to record the entire program.
  To change the Recording Speed, see page 70.

2 Select a Channel to Record

Use the 0–9 buttons or the Channel UP/DOWN arrow buttons to select the desired channel, or press the INPUT SEL. button to select Line 1, Line 2 or DV if recording from an external device connected to the front or rear Line inputs, respectively.

3 Start Recording

Press the REC button on the remote control or front panel.
For options while recording is in progress, see “Special Recording Features”.

4 Pause/Resume Recording

Press the ⏸(REC/PAUSE) button.
Press ●(REC) again to resume.

5 Stop Recording

Press the ■(STOP) button.

Special Recording Features

While a recording is in progress, you can watch a different channel, watch a different media, or add recording time in 30-minute increments.

1 Watch a Different Channel

Press the TV/VCR button on the remote to switch to your TV tuner, then select a different channel on your television.

2 Watch a different media during recording

You can watch DVD during VCR recording or watch Video tape during DVD recording.

- During VCR recording, insert a DVD in the DVD deck. The output will automatically change to the DVD and start playback.
- During DVD recording, insert a Video tape in the VCR deck. The output will automatically change to the VCR and start playback. (Only if tape is missing the safety tab)

3 Add Recording Time

Refer to the One-Touch Recording (OTR).

4 Recording DVD and VCR at the same time

You can record DVD and VCR at the same time, but both modes must be set up to record separately.

- Press the DVD/VCR button to set the unit to DVD or VCR mode.
- Choose Line input mode (Ch, Line1, Line2 or DV). for DVD or VCR.
- Choose REC mode for DVD or VCR.
- Press REC button for DVD or VCR.

Note

- ■ When DVD Recorder-VCR is connected to TV using S-Video or component video cable, the playback screen on the video tape will not display during DVD recording.
- ■ You cannot record different channel at the same time.
- ■ The DVD and VCR cannot start recording at the exact same time. You must set one mode to start recording, then the other.

Record Speed

You can slow down the recording speed from SP to SLP in order to fit six hours of programming on a T-120 tape.

1 Start Recording

Follow the Basic Recording instructions on page 69.

2 Set Record Speed

Press the REC SPEED button on the remote control to set the Record Speed to one of the following options:

- SP – Standard Play, for best picture quality.
- SLP – Super Long Play, for maximum recording time (3 times SP).

Note

- ■ The selected Record Speed will appear on the front panel display and on-screen display.

Maximum Recording Time - SP vs. SLP

Tape Length	SP (Standard Play)	SLP (Super Long Play)
T-120	2 hrs	6 hrs
T-160	2hrs 40 mins	8 hrs
T-180	3 hrs	9 hrs

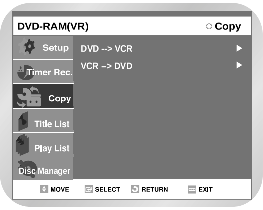
Note

- ■ When you watch or record on the VCR during DVD Recording, some function buttons may not operate.
  The message “This function is not available.” will be displayed.
- ■ SP(Standard Play) is for best picture quality.
- ■ SLP(Super Long Play) is for maximum recording time.

Copy to DVD or VCR

DVD-RAM DVD-RW DVD-R

You can copy DVD to VCR or VCR to DVD.
Press MENU button and select Copy.


DVD-RAM(VR)
○ Copy
Setup
Timer Rec.
Copy
Title List
Play List
Disc Manager
DVD --> VCR ▶
VCR --> DVD ▶
MOVE
SELECT
RETURN
EXIT

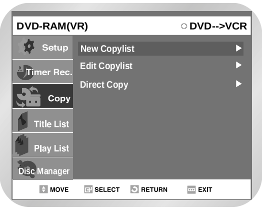
DVD to VCR

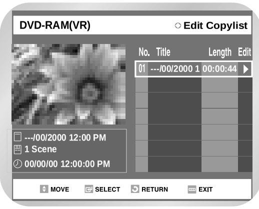
1 Select DVD –> VCR to copy DVD to VCR.

- Check the remaining time on the tape.

2 If you want to copy from the Copylist, choose “Edit Copylist”.

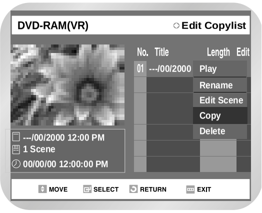
- To copy from “Edit Copylist”, you need to make a Copylist. To make and select a “New Copylist” (See pages 81~82).
- If you want to copy directly, choose “Direct Copy”.


DVD-RAM(VR)
○ DVD-->VCR
Setup
Timer Rec.
Copy
Title List
Play List
Disc Manager
New Copylist ▶
Edit Copylist ▶
Direct Copy ▶
MOVE
SELECT
RETURN
EXIT


DVD-RAM(VR)
○ Edit Copylist
No. Title Length Edit
01 ---/00/2000 1 00:00:44 ▶
---/00/2000 12:00 PM
1 Scene
00/00/00 12:00:00 PM
MOVE
SELECT
RETURN
EXIT

3 Select the Copylist, you want to copy

using the ▲▼ buttons and then press ▶ button.
To copy play list, select “Copy”.


DVD-RAM(VR)
○ Edit Copylist
No. Title Length Edit
01 ---/00/2000
Play
Rename
Edit Scene
Copy
Delete
---/00/2000 12:00 PM
1 Scene
00/00/00 12:00:00 PM
MOVE
SELECT
RETURN
EXIT

Direct copy DVD to VCR

1
Insert DVD disc you want to copy.

2
Insert VHS tape.

3
Press VCR copy button on front panel or remote control.

4
To stop recording press the stop button.

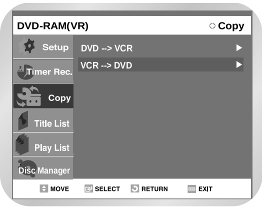
- You can only use the Direct Copy feature on DVD-R and DVD-RW(V) discs.

VCR to DVD

1 **Select VCR --> DVD to copy VCR to DVD.**

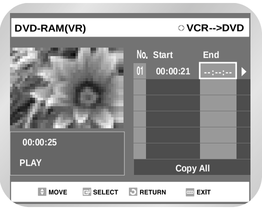
VCR --> DVD scene will be displayed.

- Check the remaining time on the disc.


DVD-RAM(VR)
○ Copy
Setup
Timer Rec.
Copy
Title List
Play List
Disc Manager
DVD --> VCR
VCR --> DVD
MOVE
SELECT
RETURN
EXIT

2 **Press ENTER button to select the start position.**

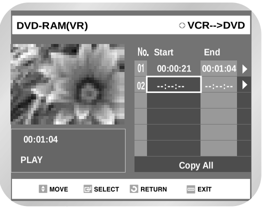
You can use ▶II, I◀◀ or ▶▶I, ◀◀ or ▶▶ buttons to search for the Start position.


DVD-RAM(VR)
○ VCR-->DVD
No. Start End
01 00:00:21 --:--:--
00:00:25
PLAY
Copy All
MOVE
SELECT
RETURN
EXIT

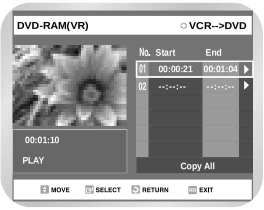
3 **Select the End position in the same way.**

A copylist will be generated.

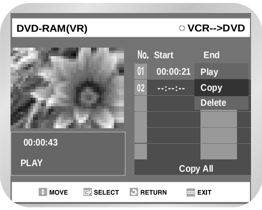
- In VCR mode, the copylist cannot be saved.


DVD-RAM(VR)
○ VCR-->DVD
No. Start End
01 00:00:21 00:01:04
02 --:--:-- --:--:--
00:01:04
PLAY
Copy All
MOVE
SELECT
RETURN
EXIT

4 **Press Enter button to choose the list you want to copy.**


DVD-RAM(VR)
○ VCR-->DVD
No. Start End
01 00:00:21 00:01:04
02 --:--:-- --:--:--
00:01:10
PLAY
Copy All
MOVE
SELECT
RETURN
EXIT

5 **To copy Copylist, select "Copy".**


DVD-RAM(VR)
○ VCR-->DVD
No. Start End
01 00:00:21
02 --:--:--
Play
Copy
Delete
00:00:43
PLAY
Copy All
MOVE
SELECT
RETURN
EXIT

- The VCR will fast forward, searching for a start position and then automatically start a copy.
- It may not be match up with Start and END point exactly.
- If you want to copy all content, select "Copy All".

Direct copy VCR to DVD

1 Insert the VHS tape you want to copy.

2 Insert Recordable DVD disc.

3 Press DVD copy button on front panel or remote control.

4 To stop recording press the stop button.

Editing

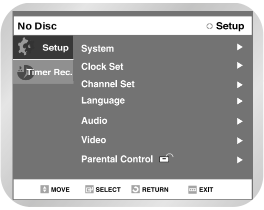
- *Viewing the Menu Functions for a Disc* 72
- *Viewing Title List* 74
- *Playing a Title List Entry* 75
- *Renaming a Title List Entry* 76
- *Deleting a Title List Entry* 77
- *Locking a Title List Entry* 78
- *Deleting a Section from a Title List Entry* 79
- *Creating a Playlist Entry* 80
- *Editing a Playlist Entry* 82
- *Editing Scene for a Playlist Entry* . 84
- *Copying a Playlist Entry to the VCR* . . 87
- *Deleting a Playlist Entry from the Playlist* 87
- *Disc Manager* 88

Viewing the Menu Functions for a Disc

DVD-RAM DVD-RW DVD-R

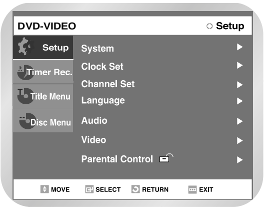
There are a variety of menu functions depending on the disc type. Press the MENU button.

No Disc


No Disc
○ Setup
Setup
Timer Rec.
System
Clock Set
Channel Set
Language
Audio
Video
Parental Control
MOVE
SELECT
RETURN
EXIT

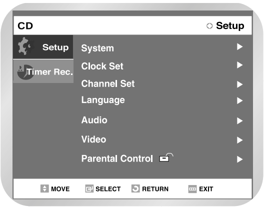
Setup
Timer Rec.

DVD-VIDEO


DVD-VIDEO
○ Setup
Setup
Timer Rec.
Title Menu
Disc Menu
System
Clock Set
Channel Set
Language
Audio
Video
Parental Control
MOVE
SELECT
RETURN
EXIT

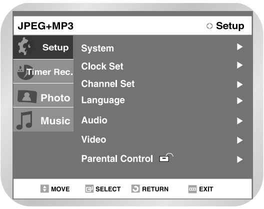
Setup
Timer Rec.
Title Menu
Disc Menu

CD


CD
○ Setup
Setup
Timer Rec.
System
Clock Set
Channel Set
Language
Audio
Video
Parental Control
MOVE
SELECT
RETURN
EXIT

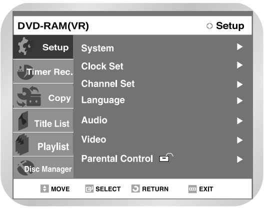
Setup
Timer Rec.

JPEG+MP3


JPEG+MP3
○ Setup
Setup
Timer Rec.
Photo
Music
System
Clock Set
Channel Set
Language
Audio
Video
Parental Control
MOVE
SELECT
RETURN
EXIT

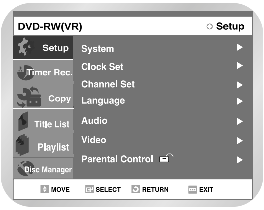
Setup
Timer Rec.
Photo
Music

DVD-RAM(VR)


DVD-RAM(VR)
○ Setup
Setup
Timer Rec.
Copy
Title List
Playlist
Disc Manager
System
Clock Set
Channel Set
Language
Audio
Video
Parental Control
MOVE
SELECT
RETURN
EXIT

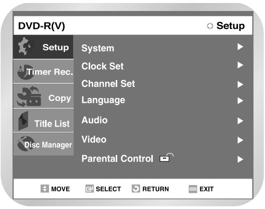
Setup
Timer Rec.
Copy
Title List
Playlist
Disc Manager

DVD-RW(VR)


DVD-RW(VR)
○ Setup
Setup
Timer Rec.
Copy
Title List
Playlist
Disc Manager
System
Clock Set
Channel Set
Language
Audio
Video
Parental Control
MOVE
SELECT
RETURN
EXIT

Setup
Timer Rec.
Copy
Title List
Playlist
Disc Manager

DVD-R(V)


DVD-R(V)
○ Setup
Setup
Timer Rec.
Copy
Title List
Disc Manager
System
Clock Set
Channel Set
Language
Audio
Video
Parental Control
MOVE
SELECT
RETURN
EXIT

Setup
Timer Rec.
Copy
Title List
Disc Manager

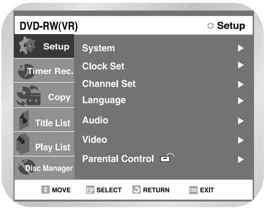
Note

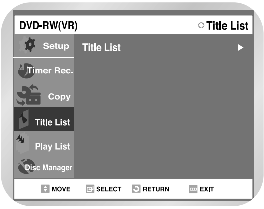
- ■ Press the MENU button again to hide the menu screen. You can configure the settings on the Setup screen using the arrow and ENTER buttons.
- ■ If recording or editing could have been finished properly because of any kinds of error, such as sudden power failure, The recording or editing might have not been done. Please be aware that a material that has been damaged is unable retrieved to its original content.

Viewing Title List

You can playback the recorded titles, edit a title name, edit record list entries and lock or unlock the record list.

1 Insert the recorded disc.
Press the MENU button.


DVD-RW(VR)
○ Setup
Setup
Timer Rec.
Copy
Title List
Play List
Disc Manager
System
Clock Set
Channel Set
Language
Audio
Video
Parental Control
MOVE
SELECT
RETURN
EXIT

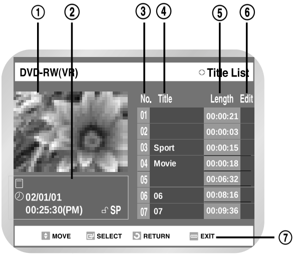

DVD-RW(VR)
○ Title List
Setup
Timer Rec.
Copy
Title List
Play List
Disc Manager
Title List
MOVE
SELECT
RETURN
EXIT

Note

- ■ Title List : Title refers to a recorded video stream. Title List shows a list to help you select a title. Since the title list consists of the information on data that is actually recorded, if one title is deleted, that title cannot be played again.

2 Press the ▲▼ button to select Title List, and then press the ENTER or ▶ button,

or press the TITLE button on the remote control.
- The Title List screen is displayed.


①
②
③
④
⑤
⑥
⑦
DVD-RW(VR)
○ Title List
No.
Title
Length
Edit
01
02
03
04
05
06
07
Sport
Movie
06
07
00:00:21
00:00:03
00:00:15
00:00:18
00:06:32
00:08:16
00:09:36
02/01/01
00:25:30(PM)
SP
MOVE
SELECT
RETURN
EXIT

① Playback screen for recorded entry.
② Information window for the selected entry: Title name, recording date, recording time, lock status, recording mode.
③ Recorded entry No.
④ Recorded entry title.
⑤ Recording duration (i.e., playtime).
⑥ Record list edit items.
⑦ Button display.

Record List edit items

1 Press the ▲▼ button to select an entry to edit, and then press the ENTER or ▶ button.

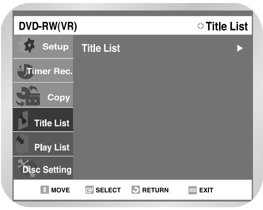
- Play : Playbacks the selected entry.
- Rename : Renames the title of the selected entry.
- Delete : Deletes the selected entry from the list.
- Edit : Deletes a desired section.
  (DVD-RAM/DVD-RW(VR mode)
- Protect : Locks or unlocks the selected entry.

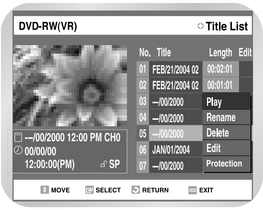
2 Press the MENU button after the operation is finished.
The menu screen will disappear.

Playing a Title List Entry

Follow these directions to playback an entry from the Title List.

1 Insert the disc.
Press the MENU button.


DVD-RW(VR)
Title List
Setup
Timer Rec.
Copy
Title List
Play List
Disc Setting
Title List
MOVE
SELECT
RETURN
EXIT


DVD-RW(VR)
Title List
No. Title Length Edit
01 FEB/21/2004 02 00:02:01
02 FEB/21/2004 02 00:01:01
03 --/00/2000
04 --/00/2000
05 --/00/2000
06 JAN/01/2004
07 --/00/2000
Play
Rename
Delete
Edit
Protection
--/00/2000 12:00 PM CH0
00/00/00
12:00:00(PM)
SP
MOVE
SELECT
RETURN
EXIT

2 Press the ▲▼ button to select Title List, and then press the ENTER or ▶ button,
or press the TITLE LIST button on the remote control.

- The View Title List screen is displayed.

3 Press the ▲▼ button to select an entry you want to playback from Title List, and then press the ENTER or ▶ button.

- The Edit Movie List menu is displayed.

4 Press the ▲▼ button to select Play, and then press the ENTER button.

- The selected entry (title) will be played back.

Note
■ You can also playback a recorded program by pressing the QUICK button and using the title, chapter or time items.

Renaming a Title List Entry

Follow these directions to rename a title list entry, i.e., to edit the title of a recorded program.

1 Insert the recorded disc.
Press the MENU button.

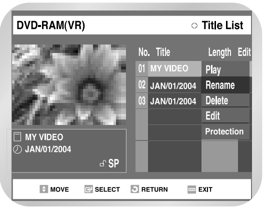
2 Press the ▲▼ button to select Title List, and then press the ENTER or ▶ button,

or press the TITLE LIST button on the remote control.

- The View Title List screen is displayed.

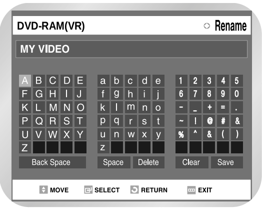
3 Press the ▲▼ button to select an entry you want to rename from Title List, and then press the ENTER or ▶ button.

- The Edit Title List menu is displayed.


DVD-RAM(VR)
Title List
No. Title Length Edit
01 MY VIDEO
02 JAN/01/2004
03 JAN/01/2004
Play
Rename
Delete
Edit
Protection
MY VIDEO
JAN/01/2004
SP
MOVE
SELECT
RETURN
EXIT

4 Press the ▲▼ button to select Rename, and then press the ENTER button.

- The Rename screen is displayed.

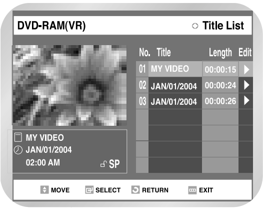

DVD-RAM(VR)
Rename
MY VIDEO
A B C D E a b c d e 1 2 3 4 5
F G H I J f g h i j 6 7 8 9 0
K L M N O k l m n o - _ + = .
P Q R S T p q r s t ~ ! @ # &
U V W X Y u n w x y % ^ & ( )
Z z
Back Space
Space
Delete
Clear
Save
MOVE
SELECT
RETURN
EXIT

5 Enter the desired characters using the arrow (▲▼◀▶) buttons.

- Back Space: Moves the cursor to the previous character. (Functions the same as CLEAR)
- Space: Enters a blank and moves the cursor to the right.
- Delete: Deletes the character at the cursor position.
- Clear: Deletes all the character inputs.
- Save: Registers the character inputs.

6 Press the arrow buttons to select Save, and then press the ENTER button.

- The changed title is displayed on the title item of the selected entry.


DVD-RAM(VR)
Title List
No. Title Length Edit
01 MY VIDEO 00:00:15
02 JAN/01/2004 00:00:24
03 JAN/01/2004 00:00:26
MY VIDEO
JAN/01/2004
02:00 AM
SP
MOVE
SELECT
RETURN
EXIT

Deleting a Title List Entry

DVD-RAM DVD-RW DVD-R

Follow these directions to delete an entry from the Title List.

1 Insert the recorded disc.
Press the MENU button.

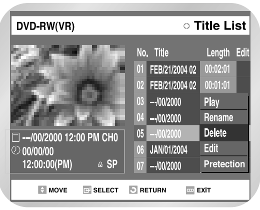
2 Press the ▲▼ button to select Title List, and then press the ENTER or ► button,

or press the TITLE LIST button on the remote control.

- The View Title List screen is displayed.

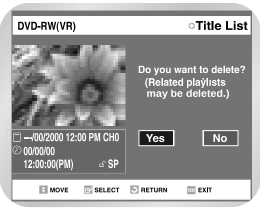
3 Press the ▲▼ button to select an entry you want to delete from Title List, and then press the ENTER or ► button.

- The Edit Title List menu is displayed.


DVD-RW(VR)
○ Title List
No. Title Length Edit
01 FEB/21/2004 02 00:02:01
02 FEB/21/2004 02 00:01:01
03 --/00/2000 Play
04 --/00/2000 Rename
05 --/00/2000 Delete
06 JAN/01/2004 Edit
07 --/00/2000 Pretection
--/00/2000 12:00 PM CH0
00/00/00
12:00:00(PM) SP
MOVE
SELECT
RETURN
EXIT

4 Press the ▲▼ button to select Delete, and then press the ENTER button.

- DVD-RAM(VR), DVD-RW(VR mode): Since Playlist is present, the message "Do you want to delete? (Related Playlist may be deleted.)" is displayed.
  DVD-RW(Video mode), DVD-R: Since Playlist is not present, the message "Do you want to delete?" is displayed.
- You cannot delete a protected entry.
  If you want to delete a protected entry, select "OFF" in the protection menu.


Do you want to delete?
(Related playlists may be deleted.)
DVD-RW(VR)
○Title List
Yes
No
--/00/2000 12:00 PM CH0
00/00/00
12:00:00(PM) SP
MOVE
SELECT
RETURN
EXIT

Note
- ■ Be careful, since you cannot recover an entry once it is deleted from Title List.

5 Press the ◄► button to select yes and than press the ENTER button.

Locking a Title List Entry

DVD-RAM DVD-RW DVD-R

Follow these directions to lock an entry if you want to protect it from unexpected deletions.

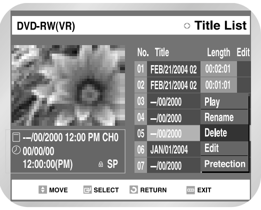
1 Insert the recorded disc.
Press the MENU button.

2 Press the ▲▼ button to select Title List, and then press the ENTER or ► button.

- The View Title List screen is displayed.

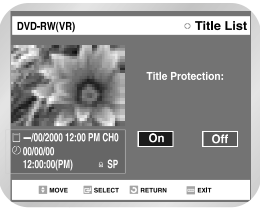
3 Press the ▲▼ button to select an entry you want to protect from Title List, and then press the ENTER or ► button.

- The Edit Title List menu is displayed.


DVD-RW(VR)
○ Title List
No. Title Length Edit
01 FEB/21/2004 02 00:02:01
02 FEB/21/2004 02 00:01:01
03 --/00/2000 Play
04 --/00/2000 Rename
05 --/00/2000 Delete
06 JAN/01/2004 Edit
07 --/00/2000 Pretection
--/00/2000 12:00 PM CH0
00/00/00
12:00:00(PM) SP
MOVE
SELECT
RETURN
EXIT

4 Press the ▲▼ button to select Protection, and then press the ENTER button.

- You will be prompted with the confirmation message 'Title Protection:'.


DVD-RW(VR)
○ Title List
Title Protection:
On
Off
--/00/2000 12:00 PM CH0
00/00/00
12:00:00(PM) SP
MOVE
SELECT
RETURN
EXIT

5 Press the ◄► buttons to select On, and then press the ENTER button.

- The Lock icon on the information window for the selected entry changes to the locked status.

Press the ◄► buttons to select off, and then press the ENTER button to unlock Title Protection.

Deleting a Section from a Title List Entry

Follow these directions to delete a section from a Title List entry.

1 Insert the recorded disc.
Press the MENU button.

- You cannot recover a section once it is deleted from Title List.

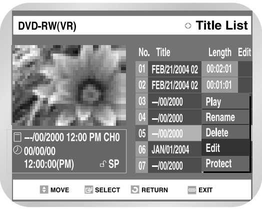
2 Press the ▲▼ button to select Title List, and then press the ENTER or ▶ button,

or press the TITLE LIST button on the remote control.

- The View Title List screen is displayed.

3 Press the ▲▼ button to select an entry you want to edit from Title List, and then press the ENTER or ▶ button.

- The Edit Title List menu is displayed.


DVD-RW(VR)
○ Title List
No. Title Length Edit
01 FEB/21/2004 02 00:02:01
02 FEB/21/2004 02 00:01:01
03 --/00/2000 Play
04 --/00/2000 Rename
05 --/00/2000 Delete
06 JAN/01/2004 Edit
07 --/00/2000 Protect
--/00/2000 12:00 PM CH0
00/00/00
12:00:00(PM) SP
MOVE SELECT RETURN EXIT

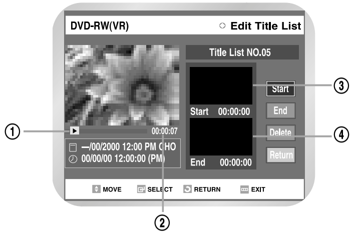
4 Press the ▲▼ button to select Edit, and then press the ENTER button. The Edit Program is displayed.

① Playback bar

② Playtime

③ Section deletion start point window and time

④ Section deletion end point window and time


DVD-RW(VR)
○ Edit Title List
Title List NO.05
Start 00:00:00
End 00:00:00
00:00:07
--/00/2000 12:00 PM CH0
00/00/00 12:00:00 (PM)
Start
End
Delete
Return
MOVE SELECT RETURN EXIT
①
②
③
④

5 Search the start points of the section you want to delete using the playback related buttons.

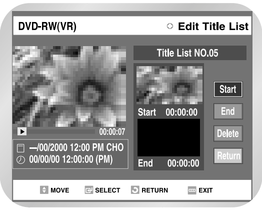
- Playback related buttons: ▶II , I◀◀ , ▶▶I, ◀◀ , ▶▶.

■ Be careful, since you cannot recover a section once it is deleted from Title List.

Note

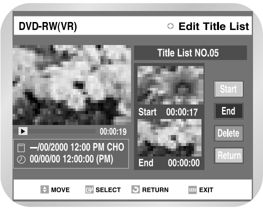
6 Press the ▲▼ button to select Start, and then press the ENTER button.

- The image and time at the start point are displayed on the start window.


DVD-RW(VR)
○ Edit Title List
Title List NO.05
Start 00:00:00
End 00:00:00
00:00:07
--/00/2000 12:00 PM CH0
00/00/00 12:00:00 (PM)
Start
End
Delete
Return
MOVE SELECT RETURN EXIT

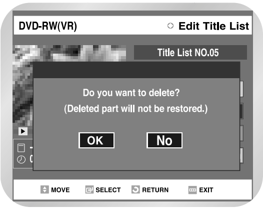
7 Press the ENTER button at the end point.

8 The image and time at the end point are displayed the end point window.


DVD-RW(VR)
○ Edit Title List
Title List NO.05
Start 00:00:17
End 00:00:00
00:00:19
--/00/2000 12:00 PM CH0
00/00/00 12:00:00 (PM)
Start
End
Delete
Return
MOVE SELECT RETURN EXIT

9 Press the ▲▼ buttons to select Delete, and then press the ENTER button.

- Message "Do you want to delete?" will be displayed.
- If you want to cancel, press RETURN button to return to the Title List screen.


Do you want to delete?
(Deleted part will not be restored.)
DVD-RW(VR)
○ Edit Title List
Title List NO.05
OK
No
MOVE SELECT RETURN EXIT

10 Press the MENU button to exit the menu after the operation is finished.
The Title List screen will disappear.

Note

■ The length of the selection to delete should be at least 5 seconds long.

■ If the length of the section to delete is less than 5 seconds, you will be prompted with the message "The range is too short".

■ If the end time precedes the start time, you will be prompted with the message "End point cannot be marked earlier than start point".

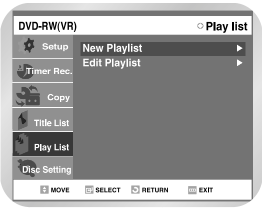
Creating a Playlist Entry

VR mode

Follow these directions to create a new playlist entry from a recorded title.

1 Insert the recorded disc.
Press the MENU button when the disc is stopped.

2 Press the ▲▼ button to select Playlist, and then press the ENTER or ▶ button.


DVD-RW(VR)
○ Play list
Setup
Timer Rec.
Copy
Title List
Play List
Disc Setting
New Playlist ▶
Edit Playlist ▶
MOVE SELECT RETURN EXIT

3 Press the ▲▼ button to select New Playlist, and then press the ENTER or ▶ button.

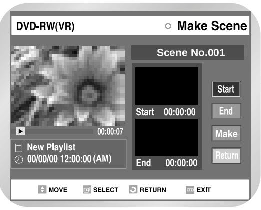
- The Make Scene screen is displayed.

Note

■ Play List : The Playlist is a unit of playback, that is created by selecting a desired scene in the Title List. Since only the information necessary for playing a desired scene is included in a playlist, even if that playlist is deleted, the original data will not be deleted.

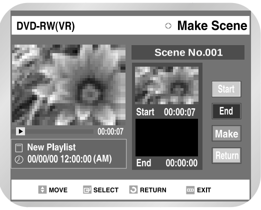
4 Select the start point of the section from which you want to create a new scene using the playback related buttons, and then press the PAUSE button.

- Playback related buttons: ▶II, ▶▶I, I◀◀, ▶▶, ◀◀


DVD-RW(VR)
○ Make Scene
Scene No.001
Start
End
Make
Return
Start 00:00:00
End 00:00:00
00:00:07
New Playlist
00/00/00 12:00:00 (AM)
MOVE
SELECT
RETURN
EXIT

5 Press the ▲▼ button to select Start, and then press the ENTER button.

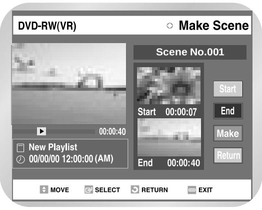
- The image and time at the start point are displayed on the Start window.
- The yellow-colored selection bar moves to the End item.


DVD-RW(VR)
○ Make Scene
Scene No.001
Start
End
Make
Return
Start 00:00:07
End 00:00:00
00:00:07
New Playlist
00/00/00 12:00:00 (AM)
MOVE
SELECT
RETURN
EXIT

6 Search the end point of the section from which you want to create a new scene using the playback related buttons, and then press the ▶II button.

7 Press the ENTER button to select END point.

- The image and time at the end point are displayed on the End window.
- The yellow-colored selection bar moves to the Make item.


DVD-RW(VR)
○ Make Scene
Scene No.001
Start
End
Make
Return
Start 00:00:07
End 00:00:40
00:00:40
New Playlist
00/00/00 12:00:00 (AM)
MOVE
SELECT
RETURN
EXIT

8 Press the ENTER button to confirm.

- A new make scene screen is displayed.
- Scenes to be made will be added to the current playlist.
- Repeat the above steps to make more than one scene.

9 If you want to cancel. press the ▲▼ buttons to select RETURN, and then select the ENTER button.

- The Edit Playlist screen is displayed.

10 Press the MENU or RETURN button to exit the menu.

- The Playlist screen will disappear.

Note

■ You can create up to 30 playlist entries.

Editing a Playlist Entry

DVD-RAM DVD-RW

VR mode

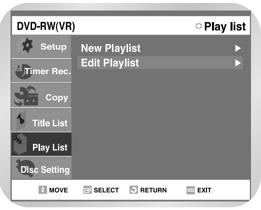
Follow these directions to playback or edit (rename, edit scene, copy and delete) the newly created playlist entries.

1 Insert the recorded disc.
Press the MENU button when the disc is stopped.

2 Press the ▲▼ button to select Playlist, and then press the ENTER or ▶ button.

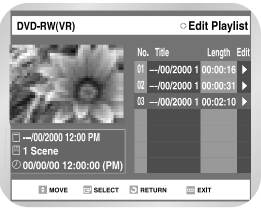
3 Press the ▲▼ button to select Edit Playlist, and then press the ENTER or ▶ button,
or press the PLAY LIST button on the remote control.

- The Edit Playlist screen is displayed.


DVD-RW(VR)
○ Play list
Setup
Timer Rec.
Copy
Title List
Play List
Disc Setting
New Playlist ▶
Edit Playlist ▶
MOVE
SELECT
RETURN
EXIT

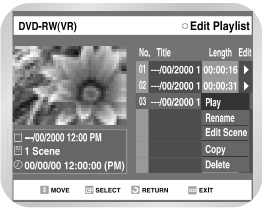
4 Press the ▲▼ button to select an entry (title) you want to edit from the Playlist,and then press the ENTER or ▶ button.

- The Edit Playlist menu is displayed.
:Play, Rename, Edit Scene, Copy, Delete


DVD-RW(VR)
○ Edit Playlist
No. Title Length Edit
01 ---/00/2000 1 00:00:16 ▶
02 ---/00/2000 1 00:00:31 ▶
03 ---/00/2000 1 00:02:10 ▶
---/00/2000 12:00 PM
1 Scene
00/00/00 12:00:00 (PM)
MOVE
SELECT
RETURN
EXIT

5 Press the ▲▼ button to select a function to use, and then press the ENTER button.

- **Play**: Playbacks the selected entry.
- **Rename**: Renames the title of the selected entry. Functionality is the same as the Rename item in the Edit Record List.
- The screen returns to the Edit Playlist screen. 2
- **Edit Scene**: Edits scenes of the selected entry.
- **Copy**: Copies the selected entry.
- **Delete**: Deletes the selected entry from the list.


DVD-RW(VR)
○ Edit Playlist
No. Title Length Edit
01 ---/00/2000 1 00:00:16 ▶
02 ---/00/2000 1 00:00:31 ▶
03 ---/00/2000 1
Play
Rename
Edit Scene
Copy
Delete
---/00/2000 12:00 PM
1 Scene
00/00/00 12:00:00 (PM)
MOVE
SELECT
RETURN
EXIT

6 Press the MENU or PLAYLIST button after the operation is finished. The Playlist screen will disappear.

Playing Playlist Entries

Follow these directions to playback the playlist entries.

1 Press the ▲▼ button to select Play, and then select the ENTER button.

- The playlist entries will be played back.
- The screen returns to the Edit Playlist screen when the playback is finished.

2 Press the STOP button to stop the playback in progress.

- The screen returns to the Edit Playlist screen.

Renaming Playlist Entries

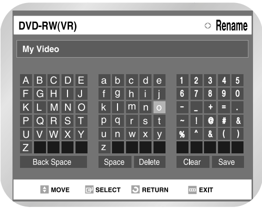
Follow these directions to rename a playlist entry, i.e., edit the title of a playlist entry.

1 Press the ▲▼ button to select Rename, and then press the ENTER button.

- The Rename screen is displayed.

2 Select the desired characters using the arrow ▲▼◀▶ buttons.

- Functionality is the same as the Rename item in the Edit Record List screen.


DVD-RW(VR)
○ Rename
My Video
A B C D E a b c d e 1 2 3 4 5
F G H I J f g h i j 6 7 8 9 0
K L M N O k l m n o - _ + = .
P Q R S T p q r s t ~ ! @ # &
U V W X Y u n w x y % ^ & ( )
Z z
Back Space
Space
Delete
Clear
Save
MOVE
SELECT
RETURN
EXIT

3 Press the arrow buttons to select save, and then press the ENTER button.

- The Name you changed is displayed on the title item of the selected playlist entry.

Editing Scene for a Playlist Entry

VR mode

Follow these directions to edit scenes for a playlist entry.

1 Insert the recorded disc.
Press the MENU button when the disc is stopped.

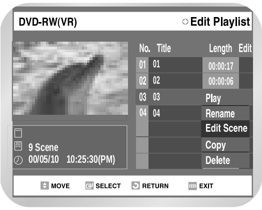
2 Press the ▲▼ button to select Playlist, and then press the ENTER or ▶ button.

3 Press the ▲▼ button to select Edit Playlist, and then press the ENTER or ▶ button,
or press PLAY LIST button on the remote control.

- The Edit Playlist screen is displayed.

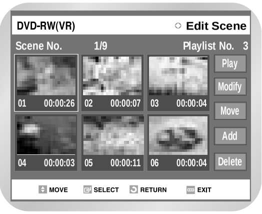
4 Press the ▲▼ button to select an entry (title) you want to edit from the Playlist,and then press the ENTER or ▶ button.

- The Edit Playlist menu is displayed.


DVD-RW(VR)
○Edit Playlist
No. Title
Length Edit
01 01 00:00:17
02 02 00:00:06
03 03 Play
04 04 Rename
Edit Scene
Copy
Delete
9 Scene
00/05/10 10:25:30(PM)
MOVE
SELECT
RETURN
EXIT

5 Press the ▲▼ button to select Edit Scene, and then press the ENTER button

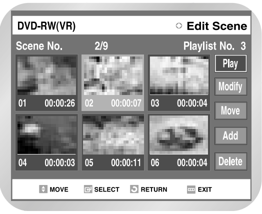
- The Edit Scene screen is displayed.


DVD-RW(VR)
○ Edit Scene
Scene No. 1/9
Playlist No. 3
01 00:00:26
02 00:00:07
03 00:00:04
04 00:00:03
05 00:00:11
06 00:00:04
Play
Modify
Move
Add
Delete
MOVE
SELECT
RETURN
EXIT

A. Playing a Desired Scene

1 Press the arrow buttons to select the scene you want to playback, and then press the ENTER button.

- The playlist entry to playback is selected.


DVD-RW(VR)
○ Edit Scene
Scene No. 2/9
Playlist No. 3
01 00:00:26
02 00:00:07
03 00:00:04
04 00:00:03
05 00:00:11
06 00:00:04
Play
Modify
Move
Add
Delete
MOVE
SELECT
RETURN
EXIT

2 Press the ENTER button.

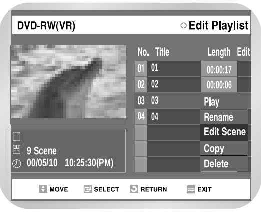
- The selected scene is played back.

B. Modifying a Scene (Replacing a Scene)

1 Press the arrow buttons to select the scene you want to modify, and then press the ENTER button.

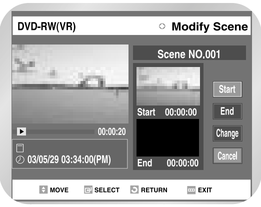
2 Press the arrow buttons to select Modify, and then press the ENTER button.

- The Modify Scene screen is displayed.


DVD-RW(VR)
○Edit Playlist
No. Title
Length Edit
01 01 00:00:17
02 02 00:00:06
03 03 Play
04 04 Rename
Edit Scene
Copy
Delete
9 Scene
00/05/10 10:25:30(PM)
MOVE
SELECT
RETURN
EXIT

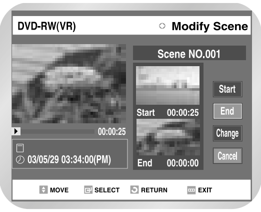
3 Select the start point of the section with which you want to modify the selected scene using the playback related buttons.

- Playback related buttons: ▶II, ▶▶I, I◀◀, ◀◀ , ▶▶.

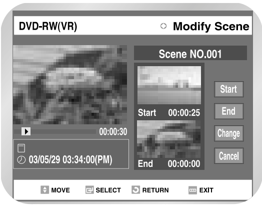

DVD-RW(VR)
○ Modify Scene
Scene NO.001
00:00:20
03/05/29 03:34:00(PM)
Start 00:00:00
End 00:00:00
Start
End
Change
Cancel
MOVE
SELECT
RETURN
EXIT

4 Press the ▲▼ button to select Start, and then press the ENTER button.

- The image and time at the start point are displayed on the Start window.


DVD-RW(VR)
○ Modify Scene
Scene NO.001
00:00:25
03/05/29 03:34:00(PM)
Start 00:00:25
End 00:00:00
Start
End
Change
Cancel
MOVE
SELECT
RETURN
EXIT

5 Press the ENTER button at the end point of the scene.


DVD-RW(VR)
○ Modify Scene
Scene NO.001
00:00:30
03/05/29 03:34:00(PM)
Start 00:00:25
End 00:00:00
Start
End
Change
Cancel
MOVE
SELECT
RETURN
EXIT

6 Press the ▲▼ buttons to select Change, and then press the ENTER button.

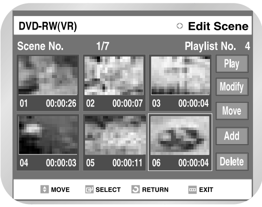
- The scene you wanted to modify is changed with the selected section.
- If you want to cancel a modification, select cancel and then press the ENTER button.

C. Moving a Scene (Changing the Position of a Scene)

1 Press the arrow buttons to select the scene you want to move (change the position), and then press the ENTER button.

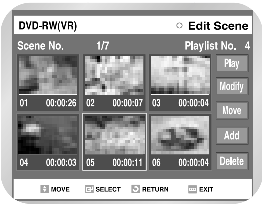
2 Press the ▲▼ buttons to select Move, and then press the ENTER button.

- A yellow selection window is displayed on the scene to move.


DVD-RW(VR)
○ Edit Scene
Scene No.
1/7
Playlist No. 4
01 00:00:26
02 00:00:07
03 00:00:04
04 00:00:03
05 00:00:11
06 00:00:04
Play
Modify
Move
Add
Delete
MOVE
SELECT
RETURN
EXIT

3 Press the arrow buttons to select the position where you want to move the selected scene, and then press the ENTER button.

- The selected scene is moved to the new position.


DVD-RW(VR)
○ Edit Scene
Scene No.
1/7
Playlist No. 4
01 00:00:26
02 00:00:07
03 00:00:04
04 00:00:03
05 00:00:11
06 00:00:04
Play
Modify
Move
Add
Delete
MOVE
SELECT
RETURN
EXIT

Note

- ■ You cannot move the selected scene to the position of the next scene, because the selected scene should be inserted before that position.

D. Adding a Scene

1 Press the arrow buttons to select the scene before which you want to add a new scene, and then press the ENTER button.

- A yellow selection window is displayed on the scene to add as a new scene.

2 Press the ▲▼ buttons to select Add and then press the ENTER button.

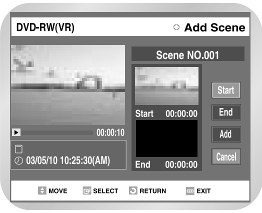
- The Add Scene screen is displayed.

3 Select the start point of the section to which you want to add the scene in step 1 using the playback related buttons.

- Playback related buttons: ▶II, ▶▶I, I◀◀, ◀◀, ▶▶

4 Press the ▲▼ button to select Start, and then press the ENTER button.

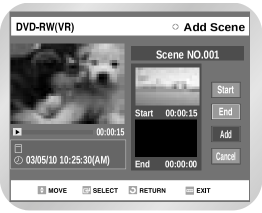
- The image and time at the start point are displayed on the Start window.


DVD-RW(VR)
○ Add Scene
Scene NO.001
00:00:10
03/05/10 10:25:30(AM)
Start 00:00:00
End 00:00:00
Start
End
Add
Cancel
MOVE
SELECT
RETURN
EXIT

5 Select the end point of the section you want to add as a new scene using the playback related buttons.

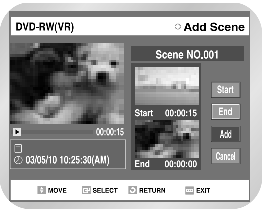
6 Press the ▲▼ button to select End, and then press the ENTER button.

- The image and time at the end point are displayed on the End window.


DVD-RW(VR)
○ Add Scene
Scene NO.001
00:00:15
03/05/10 10:25:30(AM)
Start 00:00:15
End 00:00:00
Start
End
Add
Cancel
MOVE
SELECT
RETURN
EXIT

7 Press the ▲▼ buttons to select Add, and then press the ENTER button.

- The section you wanted to add is added before the scene selected in step 1.


DVD-RW(VR)
○ Add Scene
Scene NO.001
00:00:15
03/05/10 10:25:30(AM)
Start 00:00:15
End 00:00:00
Start
End
Add
Cancel
MOVE
SELECT
RETURN
EXIT

- If you want to cancel select cancel and then press the ENTER button.

E. Deleting a Scene from the Playlist

1 Press the arrow buttons to select the scene you want to delete, and then press the ENTER button.

2 Press the ▲▼ buttons to select delete, and then press the ENTER button.

Copying a Playlist Entry to the VCR

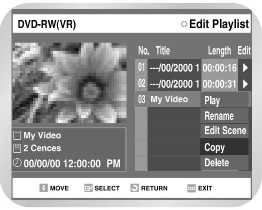
VR mode

1 Insert the recorded disc and the tape.
Press the MENU button when the disc is stopped.

2 Press the ▲▼ button to select Playlist, and then press the ENTER or ▶ button.

3 Press the ▲▼ button to select Edit Playlist, and then press the ENTER or ▶ button, **or press the PLAY LIST button on the remote control**.

- The Edit Playlist screen is displayed.


DVD-RW(VR)
Edit Playlist
No. Title Length Edit
01 ---/00/2000 1 00:00:16
02 ---/00/2000 1 00:00:31
03 My Video
Play
Rename
Edit Scene
Copy
Delete
My Video
2 Cences
00/00/00 12:00:00 PM
MOVE
SELECT
RETURN
EXIT

4 Press the ▲▼ button to select an entry(title) you want to copy to the VCR, and then press the ENTER or ▶ button.

- The Edit Playlist menu is displayed.
  Play, Rename, Edit Scene, Copy, Delete

5 Press the ▲▼ button to select Copy, and then press the ENTER button.

- The title you choose is played and copied to VCR tape.

Deleting a Playlist Entry from the Playlist

VR mode

1 Insert the recorded disc.
Press the MENU button when the disc is stopped.

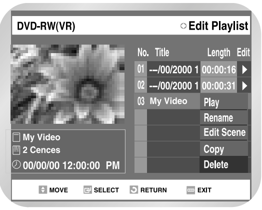
2 Press the ▲▼ button to select Playlist, and then press the ENTER or ▶ button.

3 Press the ▲▼ button to select Edit Playlist, and then press the ENTER or ▶ button, **or press the PLAY LIST button on the remote control**.

- The Edit Playlist screen is displayed.

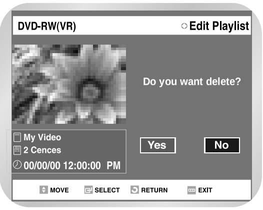
4 Press the ▲▼ button to select an entry (title) you want to delete from the Playlist, and then press the ENTER or ▶ button.

- The Edit Playlist menu is displayed.
  Play, Rename, Edit Scene, Copy, Delete


DVD-RW(VR)
Edit Playlist
No. Title Length Edit
01 ---/00/2000 1 00:00:16
02 ---/00/2000 1 00:00:31
03 My Video
Play
Rename
Edit Scene
Copy
Delete
My Video
2 Cences
00/00/00 12:00:00 PM
MOVE
SELECT
RETURN
EXIT

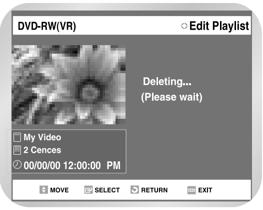
5 Press the ▲▼ button to select Delete, and then press the ENTER button.

- You will be prompted with the delete confirmation message 'Do you want to delete?'.


Do you want to delete?
DVD-RW(VR)
Edit Playlist
Yes
No
My Video
2 Cences
00/00/00 12:00:00 PM
MOVE
SELECT
RETURN
EXIT

6 Press the ◀▶ buttons to select Yes, and then press the ENTER button.

- The screen returns to the Edit Playlist screen automatically after the delete operation finished.


Deleting...
(Please wait)
DVD-RW(VR)
Edit Playlist
My Video
2 Cences
00/00/00 12:00:00 PM
MOVE
SELECT
RETURN
EXIT

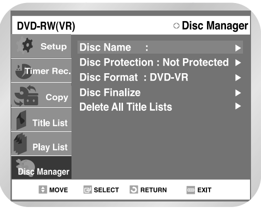
Disc Manager

Editing Disc Name

Follow these directions to give a name to a disc

1 Insert the disc.
Press the MENU button when the disc is stopped.

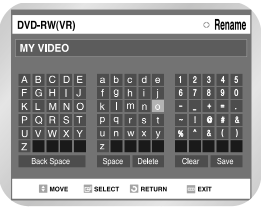
2 Press the ▲▼ button to select Disc Manager, and then press the ENTER or ▶ button.


Disc Name :
Disc Protection : Not Protected
Disc Format : DVD-VR
DVD-RW(VR)
Disc Manager
Setup
Timer Rec.
Copy
Title List
Play List
Disc Manager
Disc Finalize
Delete All Title Lists
MOVE
SELECT
RETURN
EXIT

3 Press the ▲▼ button to select Disc Name, and then press the ENTER or ▶ button.

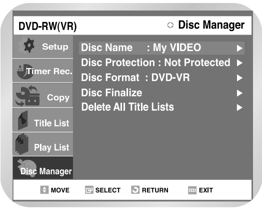
- The Edit Name screen is displayed.

4 Enter the desired characters using the arrow buttons.


MY VIDEO
DVD-RW(VR)
Rename
A B C D E a b c d e 1 2 3 4 5
F G H I J f g h i j 6 7 8 9 0
K L M N O k l m n o - _ + = .
P Q R S T p q r s t ~ ! @ # &
U V W X Y u n w x y % ^ & ( )
Z z
Back Space
Space
Delete
Clear
Save
MOVE
SELECT
RETURN
EXIT

5 Press the arrow buttons to select Save, and then press the ENTER button.

- A disc name is given to the disc.


DVD-RW(VR)
Disc Manager
Setup
Timer Rec.
Copy
Title List
Play List
Disc Manager
Disc Name : My VIDEO
Disc Protection : Not Protected
Disc Format : DVD-VR
Disc Finalize
Delete All Title Lists
MOVE
SELECT
RETURN
EXIT

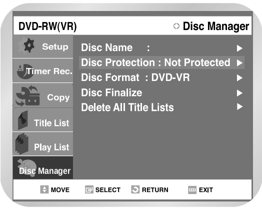
Note
- ■ You may need to clear cartridge protection or unlock the protect before beginning editing.

Disc Protection

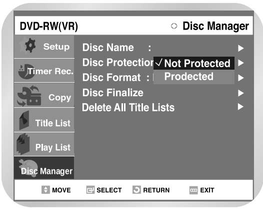
Disc Protection allows you to protect your discs from disc format and program deletion due to unintended operations.

1 Press the MENU button when the disc is stopped.

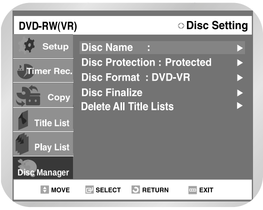
2 Press the ▲▼ button to select Disc Manager, and then press the ENTER or ▶ button.


DVD-RW(VR)
Disc Manager
Setup
Timer Rec.
Copy
Title List
Play List
Disc Manager
Disc Name :
Disc Protection : Not Protected
Disc Format : DVD-VR
Disc Finalize
Delete All Title Lists
MOVE
SELECT
RETURN
EXIT

3 Press the ▲▼ button to select Disc Protection, and then press the ENTER or ▶ button.


DVD-RW(VR)
Disc Manager
Setup
Timer Rec.
Copy
Title List
Play List
Disc Manager
Disc Name :
Disc Protectior
✓ Not Protected
Prodected
Disc Format :
Disc Finalize
Delete All Title Lists
MOVE
SELECT
RETURN
EXIT

4 Press the ▲▼ button to select Protected, and then press the ENTER button.


DVD-RW(VR)
Disc Setting
Setup
Timer Rec.
Copy
Title List
Play List
Disc Manager
Disc Name :
Disc Protection : Protected
Disc Format : DVD-VR
Disc Finalize
Delete All Title Lists
MOVE
SELECT
RETURN
EXIT

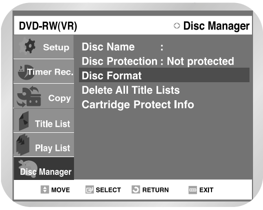
Note
- ■ Disc Protection will operate only if cartridge protect is cleared.

Formatting a DVD-RAM/DVD-RW Disc

Use these instructions to format a disc. The cartridge write protect tab should be set to the unprotect position. The disc protection should also be cleared.

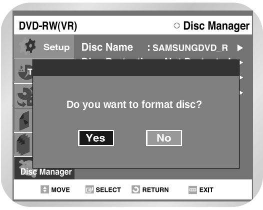
1 Insert a disc to be formated.
Press the MENU button with the disc stopped.

2 Press the ▲▼ button to select Disc Manager, and then press the ENTER or the ▶ button.


DVD-RW(VR)
Disc Manager
Setup
Timer Rec.
Copy
Title List
Play List
Disc Manager
Disc Name :
Disc Protection : Not protected
Disc Format
Delete All Title Lists
Cartridge Protect Info
MOVE
SELECT
RETURN
EXIT

3 Press the ▲▼ button to select Disc Format, and then press the ENTER or the ▶ button.

- You will be prompted with the confirmation message 'Do you want to format disc?'.
- If you press ENTER you will be prompted with the confirmation message 'All data will be deleted. Do you want to continue?'.

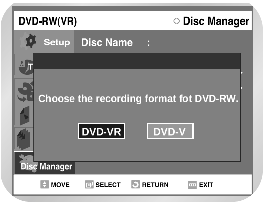

Do you want to format disc?
DVD-RW(VR)
Disc Manager
Setup
Disc Name : SAMSUNGDVD_R
Yes
No
Disc Manager
MOVE
SELECT
RETURN
EXIT

4 Press the ◀▶ buttons to select Yes, and then press the ENTER button.

- The disc is formatted.

DVD-RW

You will be prompted with the confirmation message “Choose the recording format for DVD-RW”.


Choose the recording format fot DVD-RW.
DVD-RW(VR)
Disc Manager
Setup
Disc Name :
DVD-VR
DVD-V
Disc Manager
MOVE
SELECT
RETURN
EXIT

DVD-VR and DVD-V are defined according to their recording format

	DVD-VR	DVD-V
Editing	Possible (Partial editing is possible)	Inconvenience
DISC	DVD-RAM DVD-RW	DVD-RW DVD-R

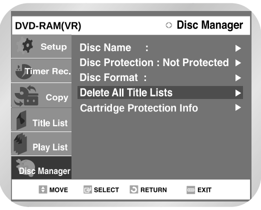
Delete All Title Lists

DVD-RAM
DVD-RW
DVD-R

Follow these instructions to delete all title lists.

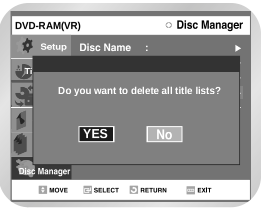
1 Insert the recorded disc.
Press the MENU button with the disc stopped.

2 Press the ▲▼ button to select Disc Manager, and then press the ENTER or the ▶ button.


DVD-RAM(VR)
○ Disc Manager
Setup
Timer Rec.
Copy
Title List
Play List
Disc Manager
Disc Name :
Disc Protection : Not Protected
Disc Format :
Delete All Title Lists
Cartridge Protection Info
MOVE
SELECT
RETURN
EXIT

3 Press the ▲▼ button to select Delete All Title Lists, and then press the ENTER or the ▶ button.

- You will be prompted with the confirmation message 'Do you want to delete all title lists?'.


DVD-RAM(VR)
○ Disc Manager
Setup
Disc Name :
Disc Manager
YES
No
MOVE
SELECT
RETURN
EXIT

Do you want to delete all title lists?

- You cannot delete a protected entry.
  If you want to delete a protected entry, disable Protection for it on the Lock item.
- Disc Protection: When Protected or Cartridge Protection has been set, or when a DVD-RAM is used, data cannot be deleted from a disc.

4 Press the ◀▶ buttons to select Yes, and then press the ENTER button.

- The disc is deleted.

Cartridge Protect Info (DVD-RAM)

Disc Protect allows you to protect discs from disc formatting and program deletion due to unintended operations. The cartridge write protect tab should be set to the unprotect position to be able to make a recording to a DVD-RAM disc.

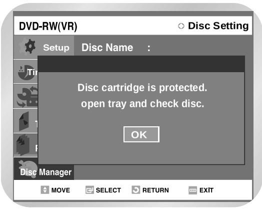
1 Insert the disc.
Press the MENU button with the disc stopped.

2 Press the ▲▼ buttons to select Disc Manager, and then press the ENTER or the ▶ button.

3 Press the ▲▼ buttons to select Cartridge Protection Info, and then press the ENTER or the ▶ button.

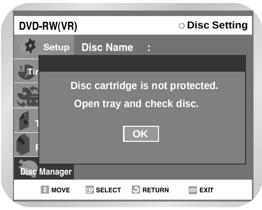
- The cartridge protection info for the disc is displayed.

If the disc cartridge is protected, open the disc tray and check the disc.


DVD-RW(VR)
○ Disc Setting
Setup
Disc Name :
Disc Manager
OK
MOVE
SELECT
RETURN
EXIT

Disc cartridge is protected.
open tray and check disc.

If the disc cartridge is not protected, proceed with recording to the disc.


DVD-RW(VR)
○ Disc Setting
Setup
Disc Name :
Disc Manager
OK
MOVE
SELECT
RETURN
EXIT

Disc cartridge is not protected.
Open tray and check disc.

Note

- ■ Disc Protection will operate only if cartridge protect is set to Not Protected.

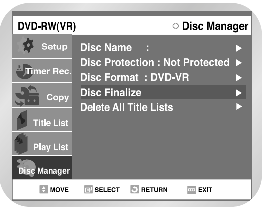
Finalizing a disc

DVD-RW
DVD-R

After you record titles onto a DVD-RW/DVD-R disc with your DVD Recorder-VCR, it needs to be finalized before it can be played back on compatible external devices.

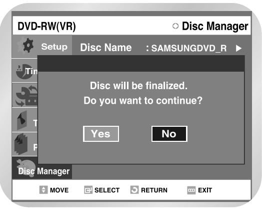
1 Insert the recorded disc.
Press the MENU button with the disc stopped.

2 Press the ▲▼buttons to select Disc Manager, and then press the ENTER or the ▶ button.


DVD-RW(VR)
○ Disc Manager
Setup
Timer Rec.
Copy
Title List
Play List
Disc Manager
Disc Name :
Disc Protection : Not Protected
Disc Format : DVD-VR
Disc Finalize
Delete All Title Lists
MOVE
SELECT
RETURN
EXIT

3 Press the ▲▼ button to select Disc Finalize, and then press the ENTER or the ▶ button.

- You will be prompted with the message 'Do you want to finalize disc?'. If you select Yes, you will be prompted again with the message ' Disc will be finalized. Do you want to continue?'


DVD-RW(VR)
○ Disc Manager
Setup
Disc Name : SAMSUNGDVD_R
Disc Manager
Yes
No
MOVE
SELECT
RETURN
EXIT

Disc will be finalized.
Do you want to continue?

Press the ◀▶ buttons to select Yes, and then press the ENTER button.

- The disc is finalized.

Note

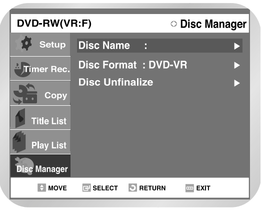
- ■ Once a disc is finalized, you cannot delete entries from the record list.
- ■ After being finalized, the DVD-R operates in the same manner as a DVD-Video.
- ■ Depending on the kind of disc, the displayed screen may be slightly different.
- ■ Finalizing will be taken few minutes. If you turn the unit on/off or open the tray during finalizing, you will not be able to use the disc anymore.

Unfinalizing a disc (V/VR mode)

DVD-RW

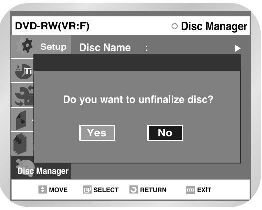
1 Insert the finalized disc.
Press the MENU button with the disc stopped.

2 Press the ▲▼ button to select Disc Manager, and then press the ENTER or ► button.

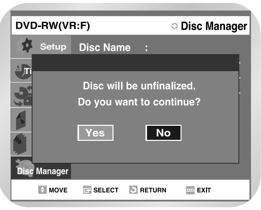

DVD-RW(VR:F)
○ Disc Manager
Setup
Timer Rec.
Copy
Title List
Play List
Disc Manager
Disc Name :
Disc Format : DVD-VR
Disc Unfinalize
MOVE
SELECT
RETURN
EXIT

3 Press the ▲▼ button to select Disc Unfinalize, and then press the ENTER or ► button.

- You will be prompted with the message 'Do you want to unfinalize disc?'. If you select Yes, you will be prompted again with the message ' Disc will be unfinalized. Do you want to continue?'


DVD-RW(VR:F)
○ Disc Manager
Setup
Disc Name :
Disc Manager
Yes
No
MOVE
SELECT
RETURN
EXIT

Do you want to unfinalize disc?


DVD-RW(VR:F)
○ Disc Manager
Setup
Disc Name :
Disc Manager
Yes
No
MOVE
SELECT
RETURN
EXIT

Disc will be unfinalized.
Do you want to continue?

Press the ◄► buttons to select Yes, and then press the ENTER button.

- The disc is unfinalized.

- A DVD-RW can be finalized or unfinalized in Video mode.

	Finalize	Unfinalize
Mark	DVD-VIDEO(RW)	DVD-RW(V)
Operation	Same as DVD-Video	Additional recording, protection and deletion are possible.

- A DVD-RW can be finalized or unfinalized in VR mode.

	Finalize	Unfinalize
Mark	DVD-RW(VR:F)	DVD-RW(VR)
Operation	Additional recording, deletion, editing, and protection are impossible.	Additional recording, deletion, editing, and protection are possible.

Reference

- *Troubleshooting (DVD-VIDEO/DVD-RAM/ DVD-RW/DVD-R)* 96
- *Troubleshooting* 97
- *Problems and Solutions (VCR)* 98
- *Specifications* 99

Troubleshooting (DVD-VIDEO/DVD-RAM/DVD-RW/DVD-R)

▼

Troubleshooting

▼

Problems and Solutions (VCR)

▼

Specifications

▼

LIMITED WARRANTY TO ORIGINAL PURCHASER

5. Disassembly and Reassembly

5-1 Cabinet and PCB

5-1-1 Cabinet Top Removal

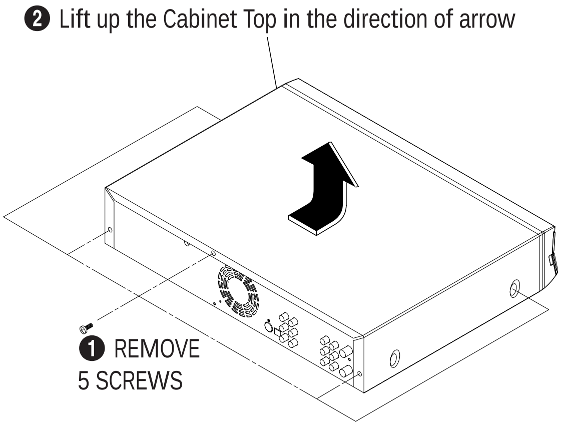

❷ Lift up the Cabinet Top in the direction of arrow
❶ REMOVE
5 SCREWS

Fig. 5-1 Cabinet Top Removal

5-1-2 Ass’y Bottom Cover Removal

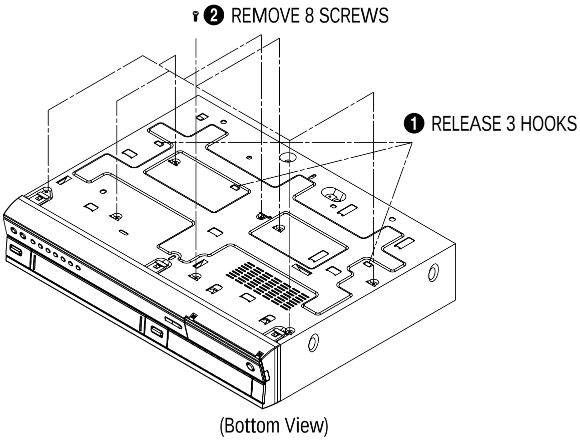

❷ REMOVE 8 SCREWS
❶ RELEASE 3 HOOKS
(Bottom View)

Fig. 5-2 Ass’y Bottom Cover Removal

5-1-3 Ass’y Front Panel Removal

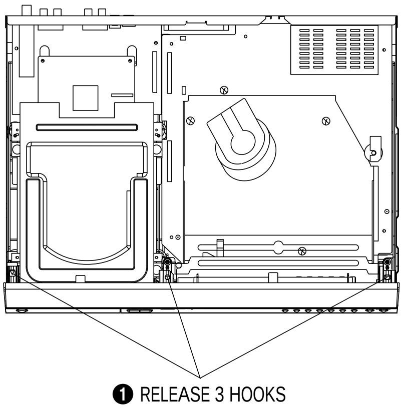

❶ RELEASE 3 HOOKS

Fig. 5-3 Ass’y Front Panel Removal(Top View)

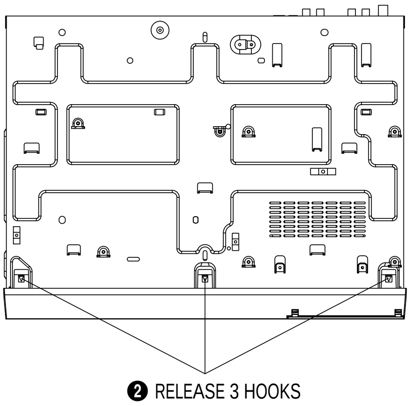

❷ RELEASE 3 HOOKS

Fig. 5-4 Ass’y Front Panel Removal(Bottom View)

5-1-4 Chassis Removal

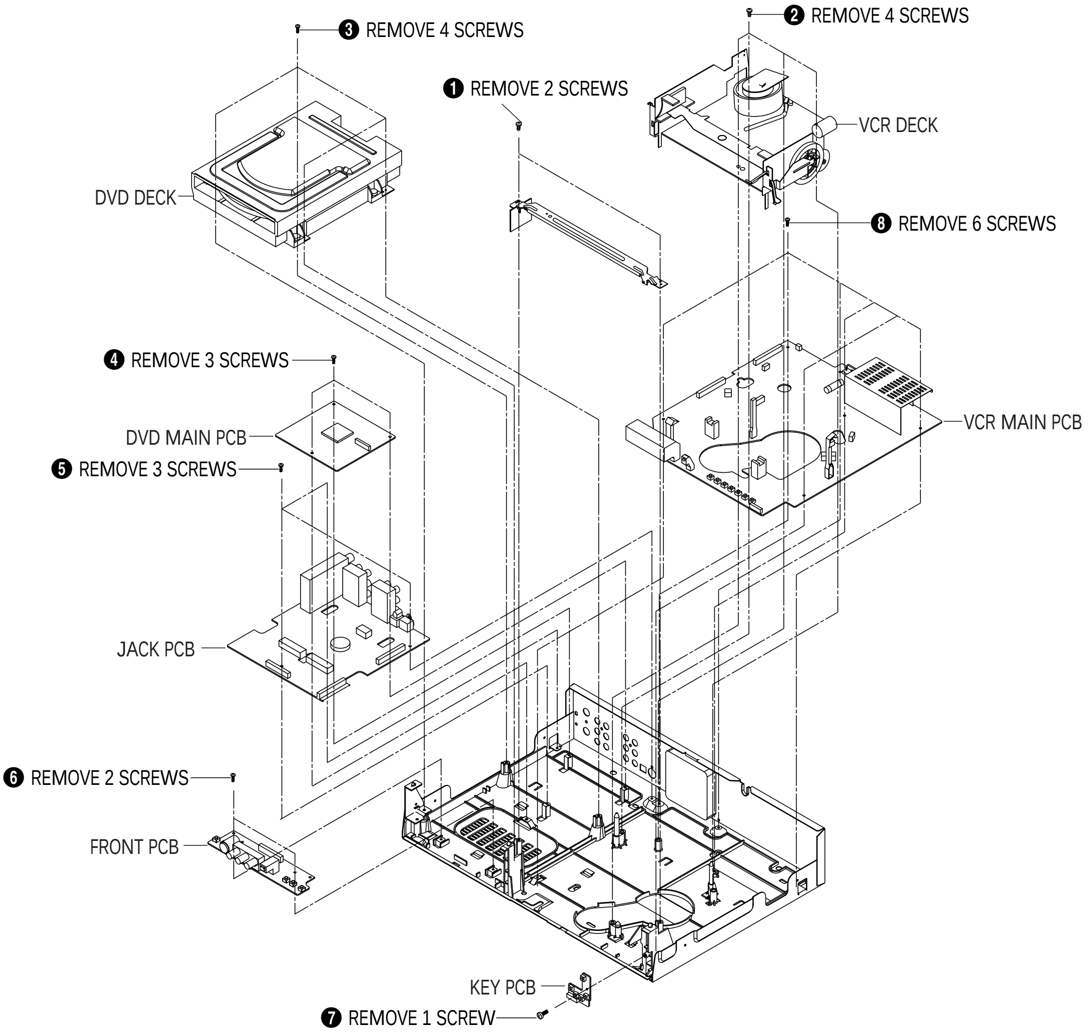
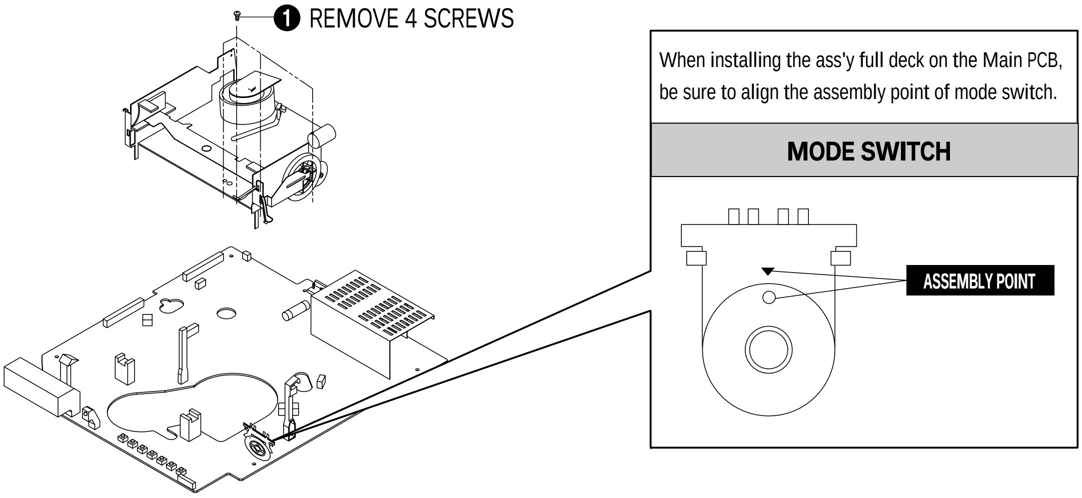

❷ REMOVE 4 SCREWS
❸ REMOVE 4 SCREWS
❶ REMOVE 2 SCREWS
VCR DECK
DVD DECK
❽ REMOVE 6 SCREWS
❹ REMOVE 3 SCREWS
VCR MAIN PCB
DVD MAIN PCB
❺ REMOVE 3 SCREWS
JACK PCB
❻ REMOVE 2 SCREWS
FRONT PCB
KEY PCB
❼ REMOVE 1 SCREW

Fig. 5-5 Chassis Removal

5-1-5 VCR Main PCB Removal


❶ REMOVE 4 SCREWS
MODE SWITCH
ASSEMBLY POINT

When installing the ass'y full deck on the Main PCB, be sure to align the assembly point of mode switch.

Fig. 5-6 VCR Main PCB Removal

5-2 Circuit Board Locations

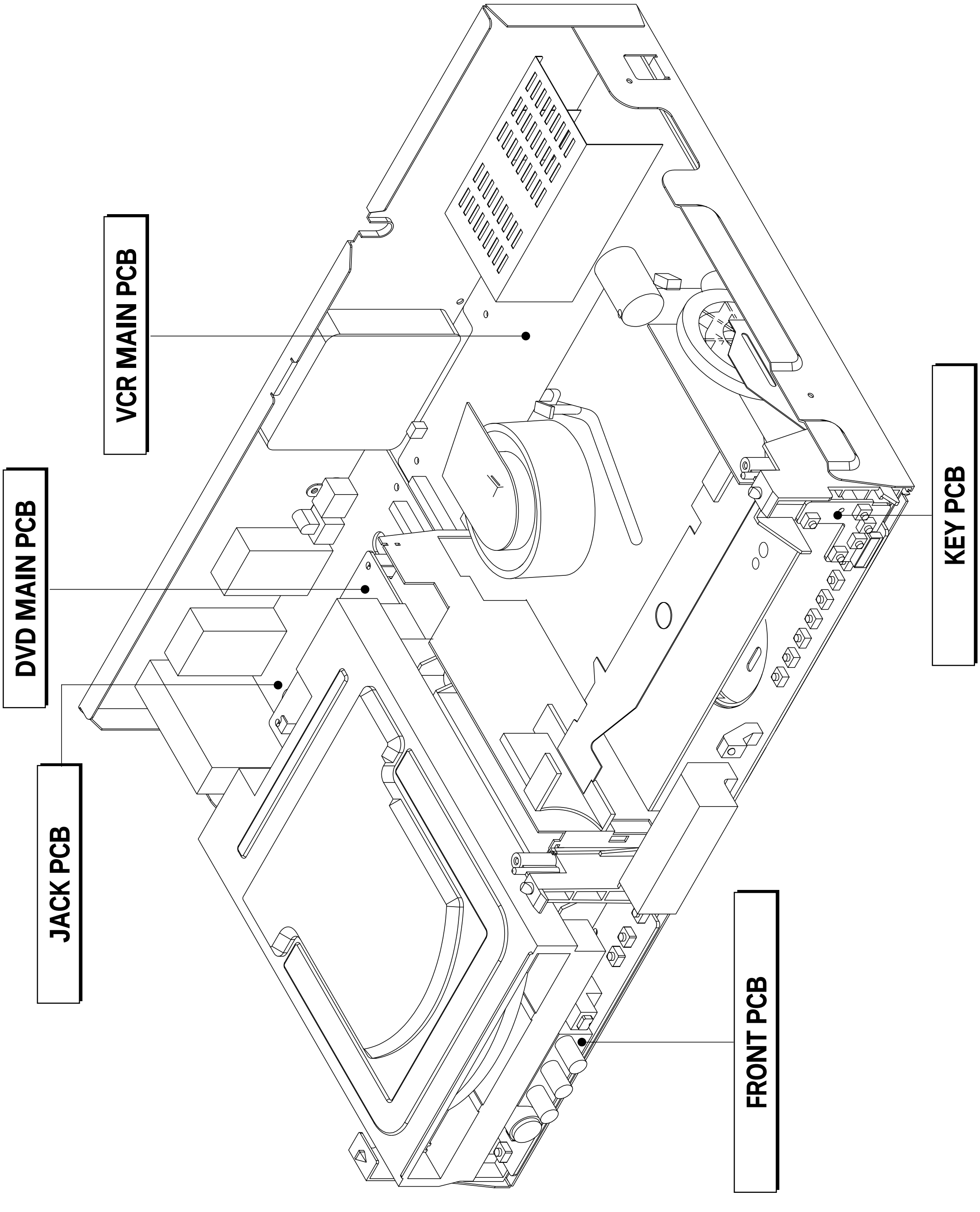

VCR MAIN PCB
DVD MAIN PCB
JACK PCB
KEY PCB
FRONT PCB

Fig. 5-7 Circuit Board Locations

5-3 VCR Deck Parts Locations

5-3-1 Top View

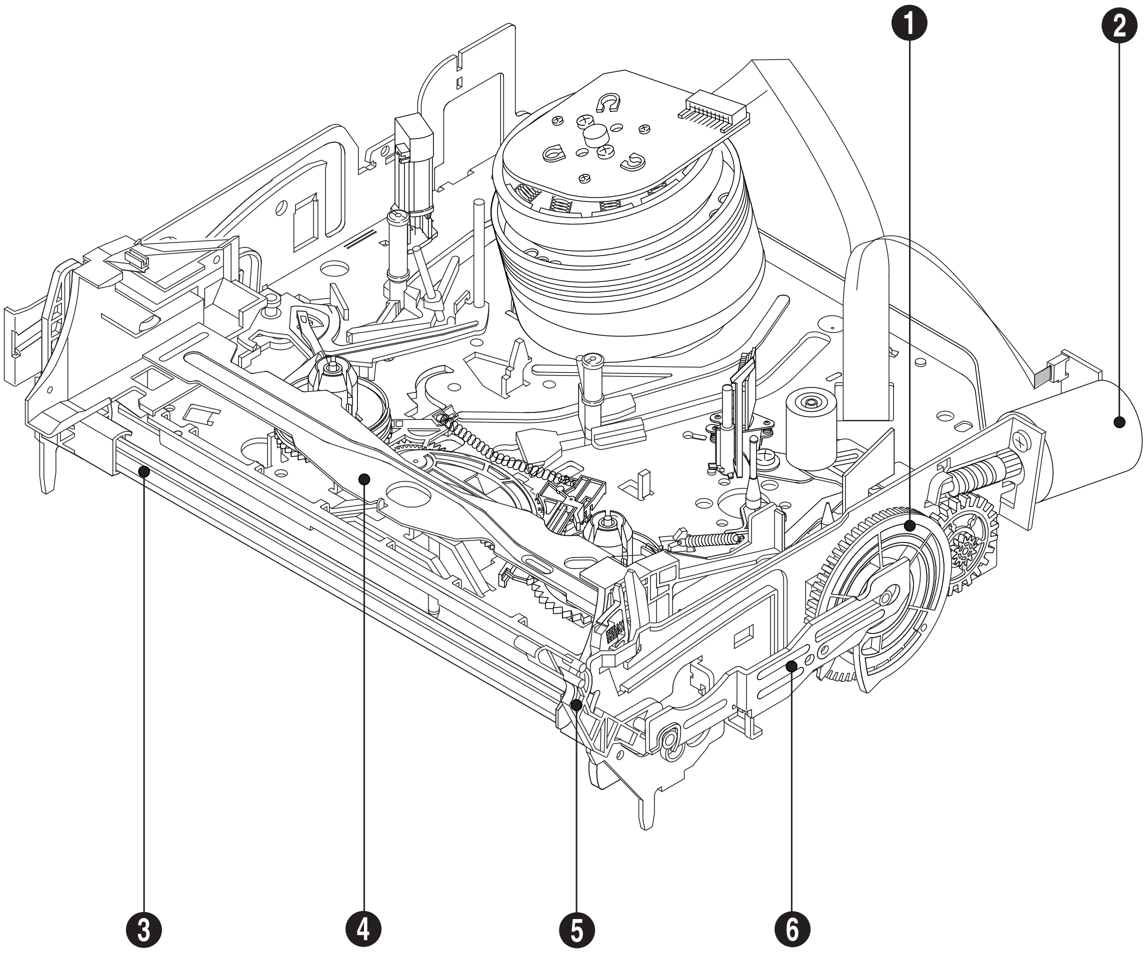


Fig. 5-8 Top parts Location-1

❶ GEAR FL CAM
❷ MOTOR LOADING ASS'Y
❸ LEVER FL ARM ASS'Y
❹ HOLDER FL CASSETTE ASS'Y
❺ LEVER FL DOOR
❻ SLIDER FL DRIVE

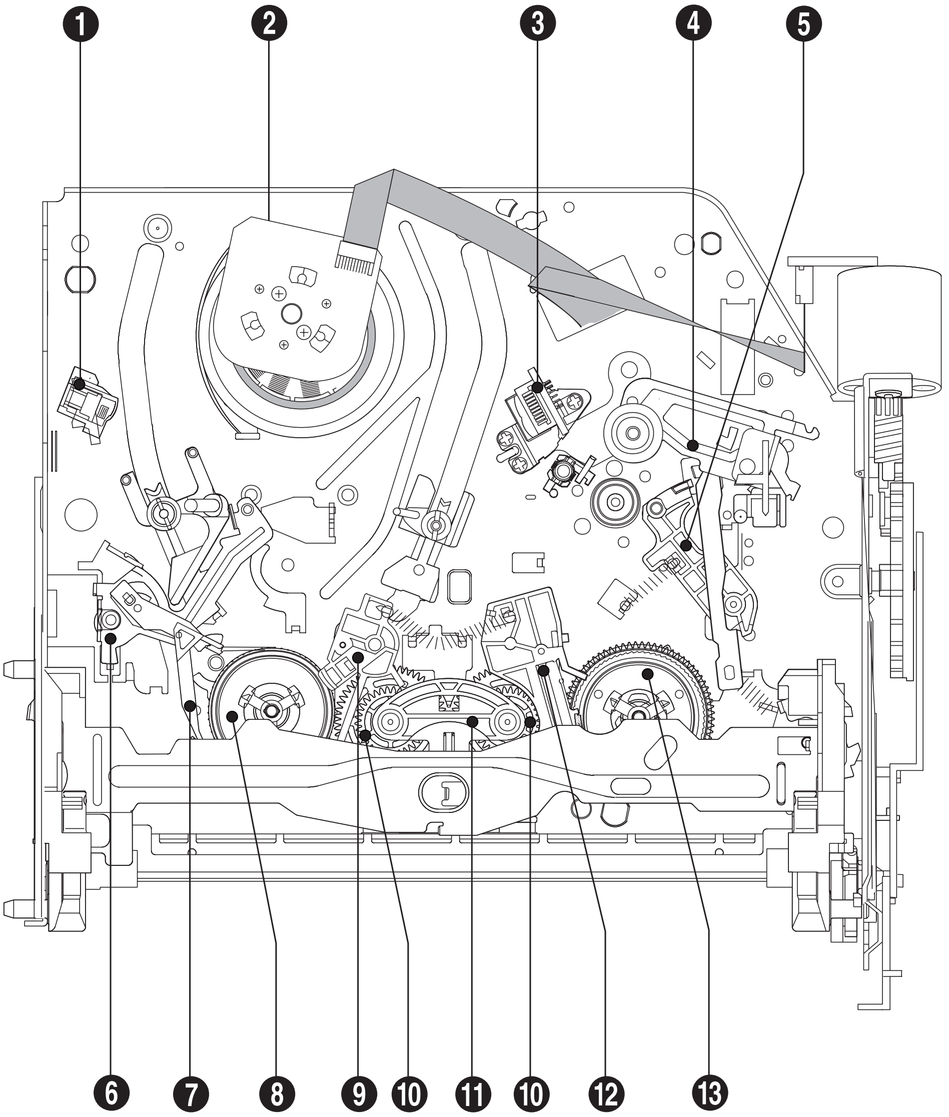


Fig. 5-9 Top Parts Location-2

- ❶ FE HEAD
- ❷ CYLINDER ASS'Y
- ❸ ACE HEAD ASS'Y
- ❹ LEVER UNIT PINCH ASS'Y
- ❺ LEVER #9 GUIDE ASS'Y
- ❻ LEVER TENSION ASS'Y
- ❼ BAND BRAKE ASS'Y
- ❽ DISK S REEL
- ❾ LEVER S BRAKE ASS'Y
- ❿ GEAR IDLE
- ⓫ LEVER IDLE
- ⓬ LEVER T BRAKE ASS'Y
- ⓭ DISK T REEL

5-3-2 Bottom View

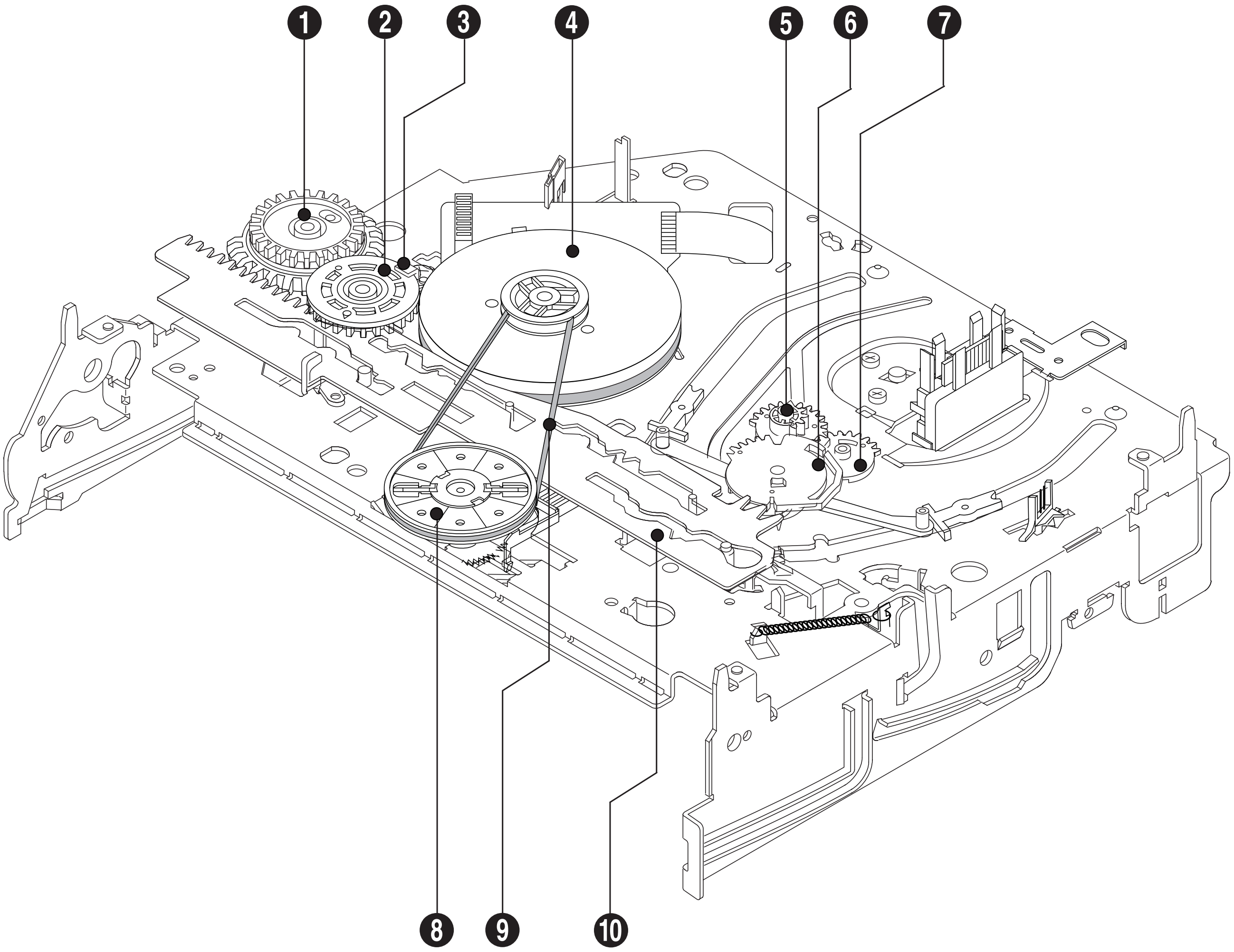


Fig. 5-10 Bottom Parts Location

❶ GEAR JOINT 1
❷ GEAR JOINT 2
❸ BRAKET GEAR
❹ MOTOR CAPSTAN ASS’Y
❺ LEVER T LOAD ASS’Y
❻ GEAR LOADING DRIVE
❼ LEVER S LOAD ASS’Y
❽ HOLDER CLUTCH ASS’Y
❾ BELT PULLEY
❿ SLIDER CAM

5-4 VCR Deck

5-4-1 Holder FL Cassette Ass’y Removal

1) Pull the Holder FL Cassette Ass'y ❶ to the eject position.
2) Pull the Holder FL Cassette Ass'y ❶ as grasping the Holder FL Cassette Ass'y ❶ and Lever FL Cassette-R ❷ in the same time to release hooking from Main Base until the Boss [A] of Holder FL Cassette Ass'y ❶ is taken out from the Rail [B].
3) Lift the Holder FL Cassette Ass'y ❶, in this time, you have to grasp the Lever FL Cassette-R ❷ Continuously until the Holder FL Cassette Ass'y ❶ is taken out completely.

Note : Be sure to insert Lever FL Cassette-R ❷ in the direction of “A” to prevent separation and breakage of the Lever FL Cassette-R ❷ at disassembling and reassembling.

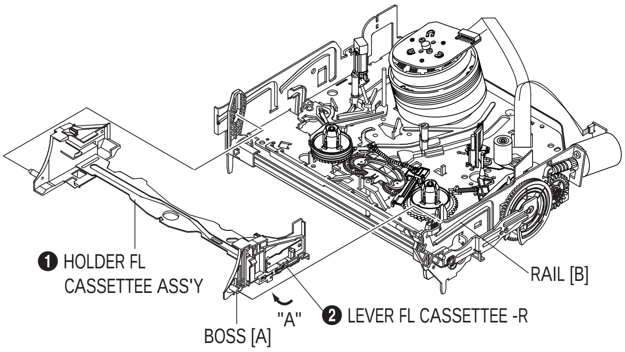


Fig. 5-11 Holder FL Cassette Ass’y Removal

5-4-2 Lever FL Arm Ass’y Removal

1) Push the hole “A” in the direction of arrow “B” use the pin.(about Dia. 2.5)
2) Pull out the Lever FL Arm Ass'y ❶ from the Boss of Main Base.
3) Remove the Lever FL Arm Ass'y ❶ in the direction of arrow “C”.

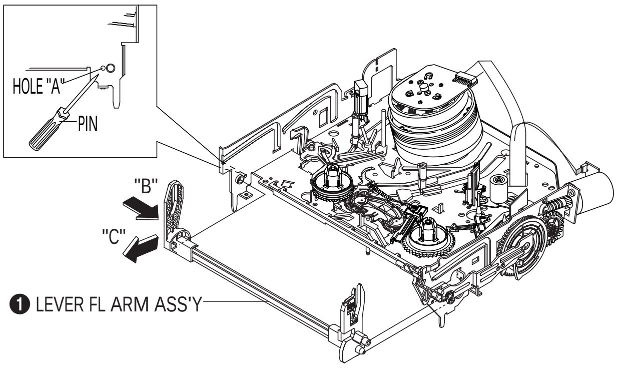


Fig. 5-12 Lever FL Arm Ass’y Removal

5-4-3 Lever FL Door Removal

1) Release the Hook ❷ and Remove the Lever FL Door ❶ in the direction of arrow "A".

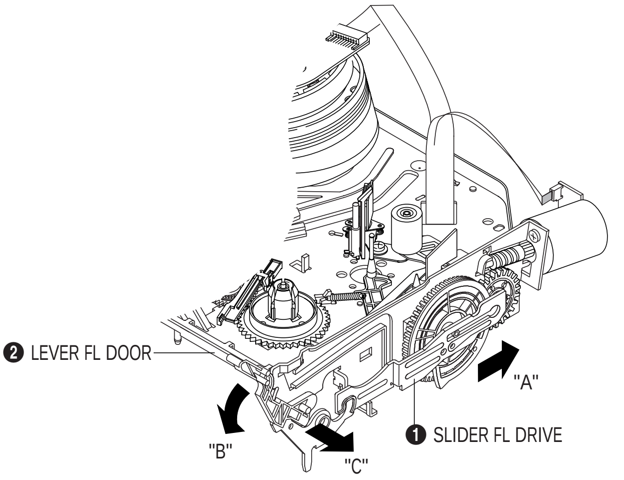

❷ LEVER FL DOOR
"A"
❶ SLIDER FL DRIVE
"B"
"C"

Fig. 5-13 Lever FL Door Removal

5-4-4 Slider FL Drive, Gear FL Cam Removal

1) Pull the Slider FL Drive ❶ to the front direction.
2) Remove the Slider FL Drive ❶ in the direction of arrow. (Refer to Fig. 5-13)
3) Remove the Gear FL cam ❷.

Note : When reinstalling be sure to reassemble Slider FL drive ❶ after you insert the Boss of Lever FL ARM-R in Groove of Slider Fl drive ❶.

Assembly : Align the Gear FL Cam ❶ with the Gear worm wheel Post as shown drawing.
(Refer to Timing point)

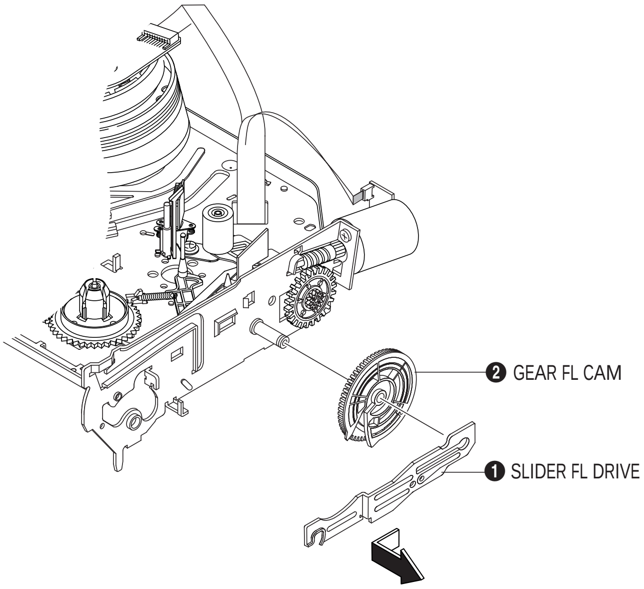

❷ GEAR FL CAM
❶ SLIDER FL DRIVE

Fig. 5-14 Slider FL Drive Removal

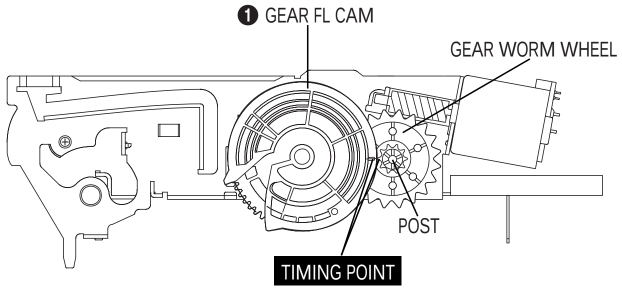

❶ GEAR FL CAM
GEAR WORM WHEEL
POST
TIMING POINT

Fig. 5-15 Gear FL Cam, Gear Worm

5-4-5 Gear Worm Wheel Removal

1) Remove the Gear Worm wheel ❶.

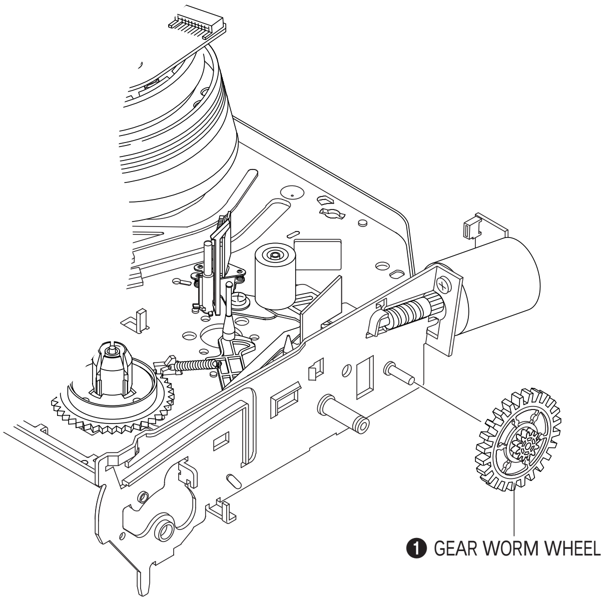

❶ GEAR WORM WHEEL

Fig. 5-16 Gear Worm Wheel Removal

5-4-6 Cable Flat Removal

1) Remove the Drum connecting part of Cable Flat ❶ from Connector Waffer ❷.
2) Remove the Loading Motor connecting part of Cable Flat ❶ from Connector Waffer ❸.

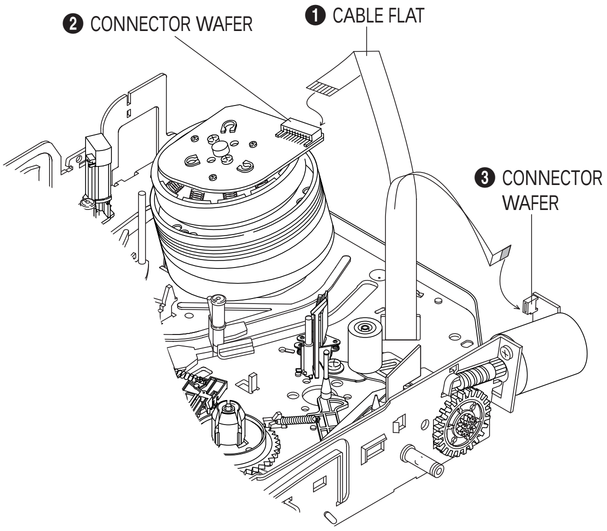

❷ CONNECTOR WAFER
❶ CABLE FLAT
❸ CONNECTOR WAFER

Fig. 5-17 Cable Flat Removal

5-4-7 Motor Loading Ass’y Removal

1) Remove the screw ❶.
2) Remove the Motor Loading Ass’y ❷.

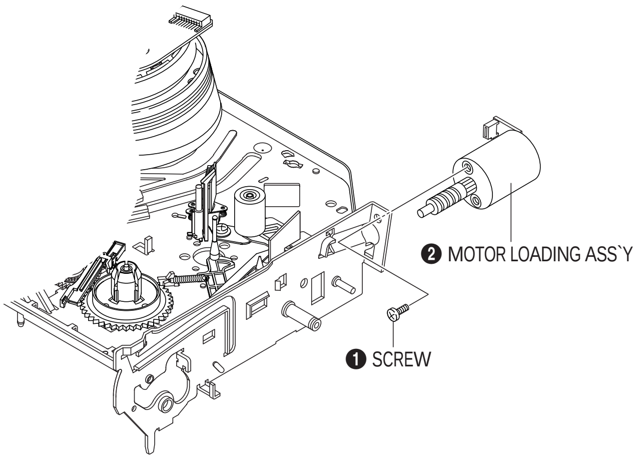

❷ MOTOR LOADING ASS`Y
❶ SCREW

Fig.5-18 Motor Loading Ass’y Removal

5-4-8 Bracket Gear, Gear Joint 2, 1 Removal

1) Remove the SCREW ❶.
2) Remove the Bracket Gear ❷.
3) Remove the Gear Joint 2 ❸.
4) Remove the Gear Joint 1 ❹.

Assembly :

1) Be sure to align dot mark of Gear Joint 1 ❶ with dot mark of Gear Joint 2 ❷ as shown Fig 5-20. (Refer to Timing point1)
2) Confirm the Timing Point 2 of the Gear Joint 2 ❷ and Slider Cam ❸.

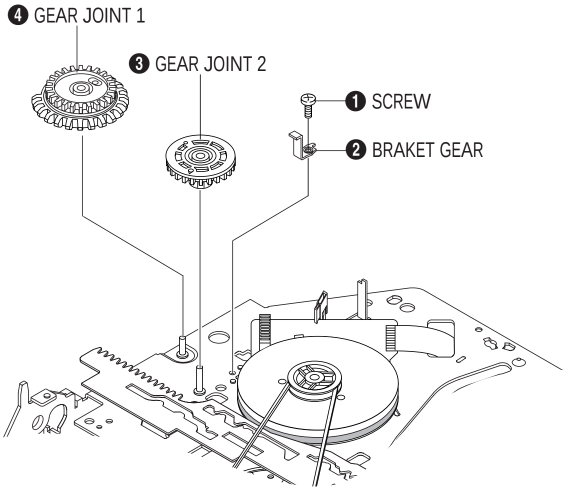

❹ GEAR JOINT 1
❸ GEAR JOINT 2
❶ SCREW
❷ BRAKET GEAR

Fig. 5-19 Bracket Gear, Gear Joint 1,2 Removal

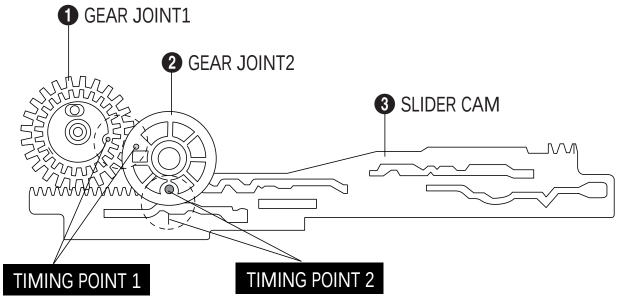

❶ GEAR JOINT1
❷ GEAR JOINT2
❸ SLIDER CAM
TIMING POINT 1
TIMING POINT 2

Fig. 5-20 Gear Joint 1,2 Assembly

5-4-9 Gear Loading Drive, Slider Cam, Lever Load S, T Ass’y Removal

1) Remove the Belt Pulley. (Refer to Fig. 5-38)
2) Remove the Gear Loading Drive ❶ after releasing Hook [A] in the direction arrow as shown in detail drawing.
3) Remove the Slider Cam ❷.
4) Remove the Lever Load S Ass’y ❸ & Lever Load T Ass’y ❹.

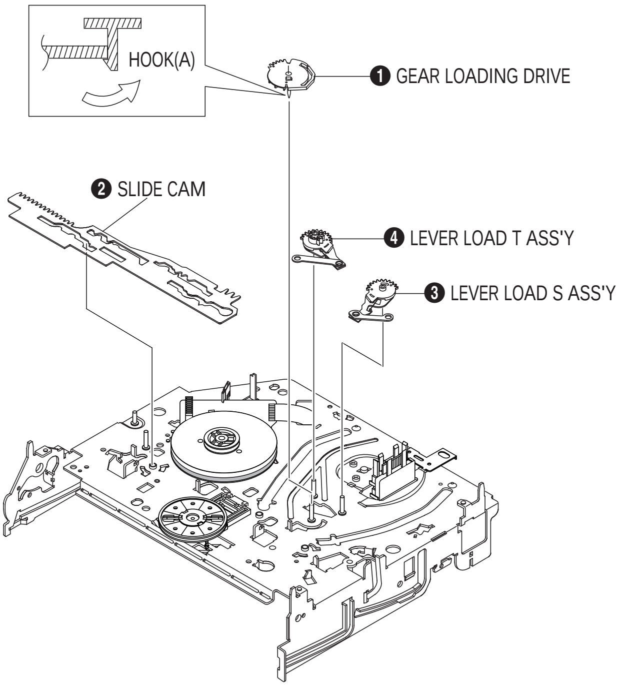

HOOK(A)
❶ GEAR LOADING DRIVE
❷ SLIDE CAM
❹ LEVER LOAD T ASS'Y
❸ LEVER LOAD S ASS'Y

Fig. 5-21 Gear Loading Drive, Slider Cam, Lever T, S Load Ass’y Removal

5-4-10 Gear Loading Drive, Slider Cam, Lever Load S, T Ass’y Assembly

1) When reinstalling, be sure to align dot of Lever Load T Ass'y ❶ with dot of Lever Load S Ass'y ❷ as shown in drawing, (Refer to Timing Point 1).
2) Insert the Pin A,B,C,D into the Slider Cam ❸ hole,
3) Be sure to align dot of Lever Load T ❶ and dot of Gear Loading Drive ❹, (Refer to Timing Point 2).
4) Aline dot of Gear Loading drive ❹ with mark of Slider Cam ❸ as shown in drawing(Refer to Timing Point 3).

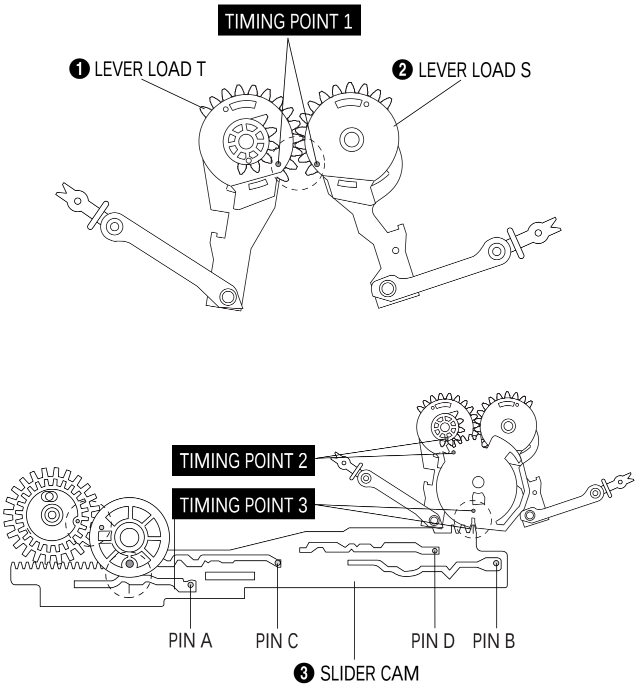

TIMING POINT 1
❶ LEVER LOAD T
❷ LEVER LOAD S
TIMING POINT 2
TIMING POINT 3
PIN A
PIN C
PIN D
PIN B
❸ SLIDER CAM

Fig. 5-22 Gear Loading Drive, Slider Cam, Lever Load S, T Ass’y Assembly

5-4-11 Lever Pinch Drive, Lever Tension Drive Removal

1) Remove the Lever Pinch Drive ❶, Lever Tension Drive ❷.

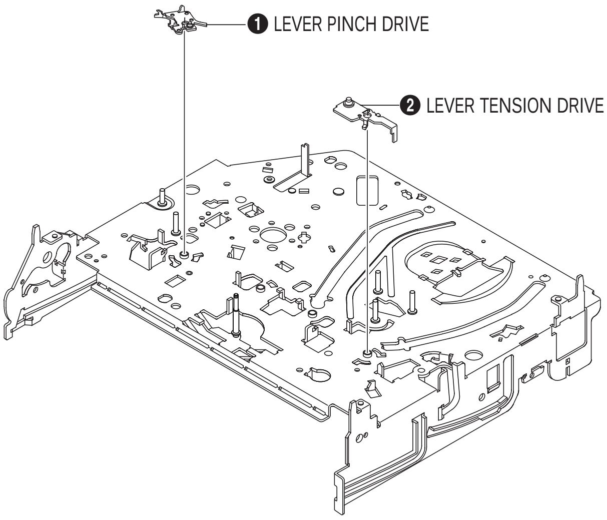

❶ LEVER PINCH DRIVE
❷ LEVER TENSION DRIVE

Fig. 5-23 Lever Pinch Drive,
Lever Tension Drive Removal

5-4-12 Lever Tension Ass'y, Band Brake Ass'y Removal

1) Remove the Lever Brake S Ass'y (Refer to Fig 5-25).
2) Remove the Spring Tension Lever ❶.
3) Rotate stopper of Main Base in the direction of arrow "A".
4) Lift the Lever Tension Ass'y ❷ & Band brake Ass'y ❸.

Note :
1) When replacing the Lever Tension Ass'y ❷, be sure to apply Grease on the post,
2) Take care not to touch stain on the felt side, and not to be folder and broken Band brake Ass'y
3) After Lever Tension Ass'y seated, Rotate stopper of Main Base to the Mark[B].

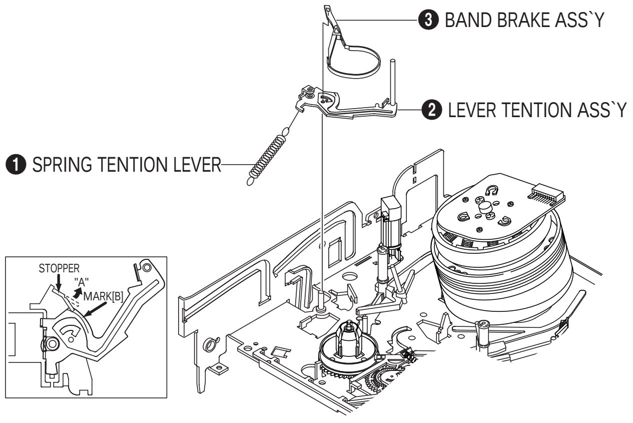

❸ BAND BRAKE ASS`Y
❷ LEVER TENTION ASS`Y
❶ SPRING TENTION LEVER
STOPPER
"A"
MARK[B]

Fig. 5-24 Lever Tension Ass'y,
Band Brake Ass'y Removal

5-4-13 Lever Brake S, T Ass’y Removal

1) Release the Hook [A] and the Hook [B], [C] in the direction of arrow as shown in Fig 5-25.
2) Lift the Lever S, T Brake Ass'y ❶, ❷ with spring brake ❸.

Assembly :
1)Assembly the Lever S Brake Ass'y ❶ on the Main Base.
2)Assembly the Lever T Brake Ass'y ❷ with spring brake ❸.

Note : Take extreme care not to be folded and transformed Spring Brake at removing or reinstalling.

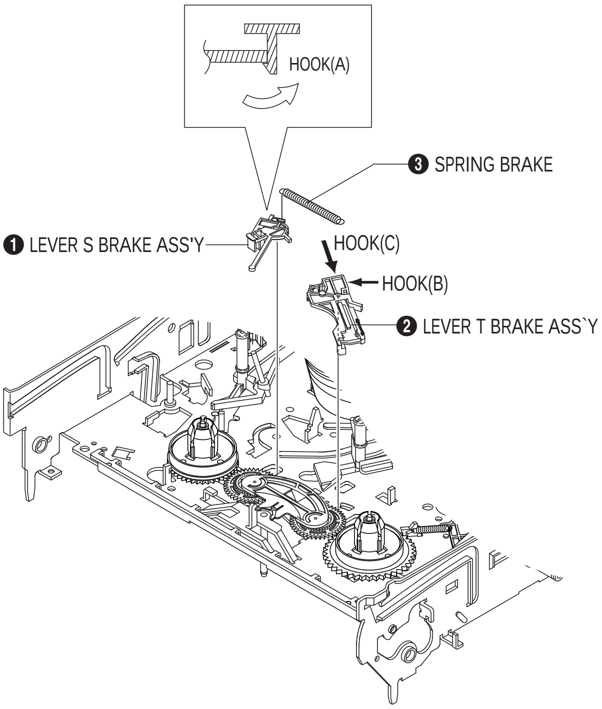

HOOK(A)
❸ SPRING BRAKE
❶ LEVER S BRAKE ASS'Y
HOOK(C)
HOOK(B)
❷ LEVER T BRAKE ASS`Y

Fig. 5-25 Lever Brake S, T Ass’y Removal

5-4-14 Gear Idle Ass’y Removal

1) Push the Lever Idle ❶ in the direction of arrow “A”, “B”.
2) Lift the Lever Idle ❶.

Assembly :
1) Apply oil in two Bosses of Lever Idle ❶.
2) Assemble the Gear Idle ❷ with the Lever Idle ❶.

Note : When replacing the Gear Idle ❷, be sure to add oil in the boss of Lever Idle ❶.

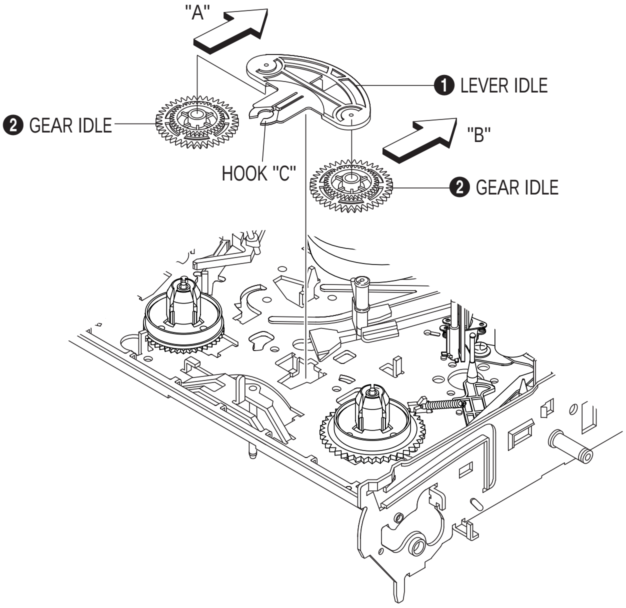

"A"
❶ LEVER IDLE
❷ GEAR IDLE
"B"
HOOK "C"
❷ GEAR IDLE

Fig. 5-26 Gear Idle Ass’y Removal

5-4-15 Disk S, T Reel Removal

1) Lift the Disk S, T Reel ❶, ❷.

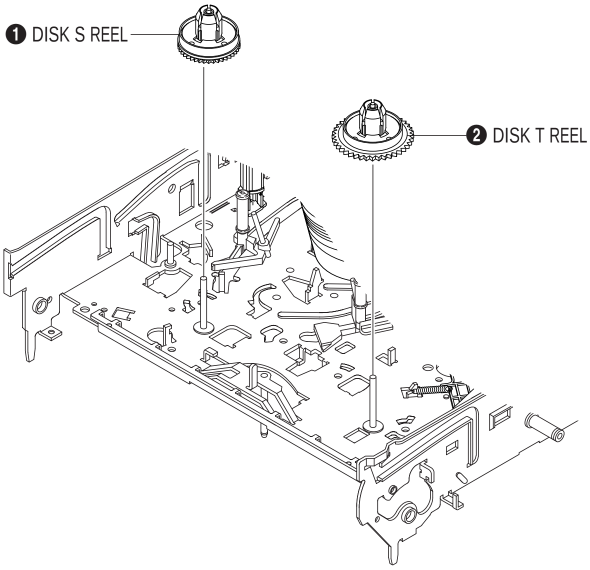

❶ DISK S REEL
❷ DISK T REEL

Fig. 5-27 Disk S, T Reel Removal

5-4-16 Holder Clutch Ass’y Removal

1) Remove the Washer Slit ❶.
2) Lift the Holder Clutch Ass’y ❷.

Note : When you reinstall Holder Clutch Ass'y
1) Check the condition of spring as shown in detail A.
2) Don't push Holder Clutch Ass'y down with excessive force Just insert Holder Clutch Ass'y into post center with dead force and Rotate it smoothly.
Be sure to confirm that spring is in the slit of Gear Center Ass'y as shown in detail B.

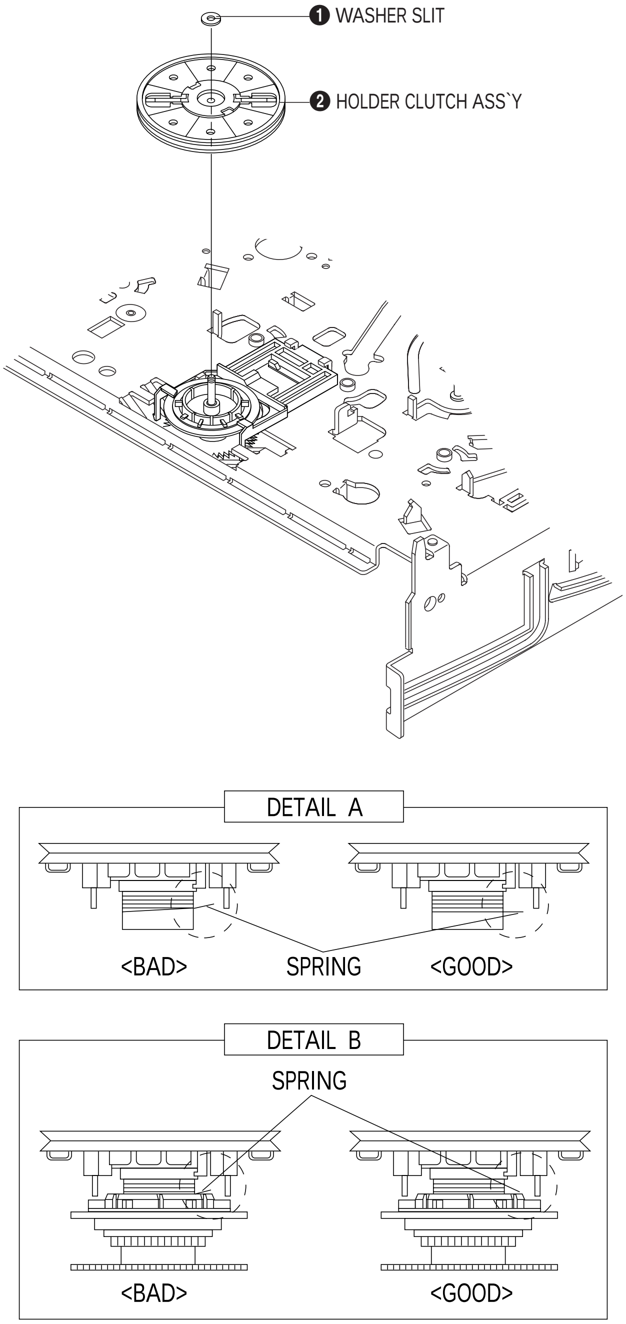

❶ WASHER SLIT
❷ HOLDER CLUTCH ASS`Y
DETAIL A
<BAD>
SPRING
<GOOD>
DETAIL B
SPRING
<BAD>
<GOOD>

Fig. 5-28 Holder Clutch Ass’y Removal

5-4-17 Lever Up Down Ass’y, Gear Center Ass’y Removal

1) Remove the 2 hooks in the direction of arrow as shown Fig. 5-28 and lift the Lever Up Down Ass’y ❶.
2) Lift the Gear Center Ass’y ❷.

Assembly :
1) Insert the Lever Up Down Ass'y ❶ in the rectangular holes on Main Base as shown in Fig 5-30.
2) Lift the Lever Up Down Ass'y ❶ about 35°. (Refer to Fig 5-30)
3) Insert Ring of the Gear Center Ass'y ❷ in the Guide of the Lever Up Down Ass'y ❶.
4) Insert the Gear Center Ass'y ❷ in the post on Main Base.
5) Push down the Lever Up Down Ass'y ❶ for locking of the Hook.

Note :
1) Take care not to separate and sentence does not mark sense.
2) Be sure to confirm that Ring of the Gear Center Ass'y ❷ is in the Guide of the Lever Up Down Ass'y ❶ after finishing assembly of Lever Up Down Ass'y ❶ and Gear Center Ass'y ❷.

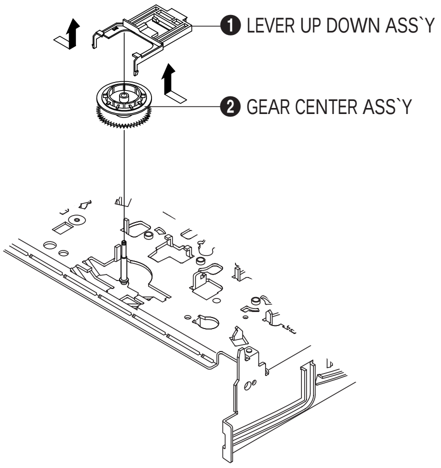

❶ LEVER UP DOWN ASS`Y
❷ GEAR CENTER ASS`Y

Fig. 5-29 Lever Up Down Ass’y Removal

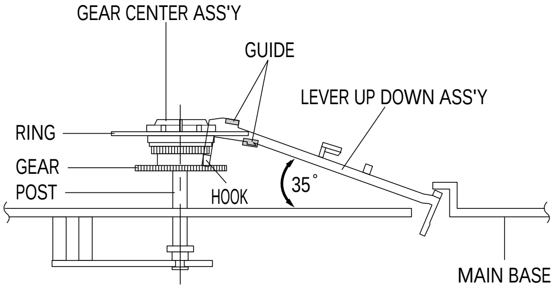

GEAR CENTER ASS'Y
GUIDE
LEVER UP DOWN ASS'Y
RING
GEAR
POST
HOOK
35˚
MAIN BASE

Fig. 5-30 Lever Up Down Ass’y Removal

5-4-18 Guide Cassette Door Removal

1) Lift the Hook [A].
2) Rotate the Guide Cassette Door ❶ in the direction of arrow.

Note : After reinstalling the Guide Cassette Door ❶ sure the Hook [A].

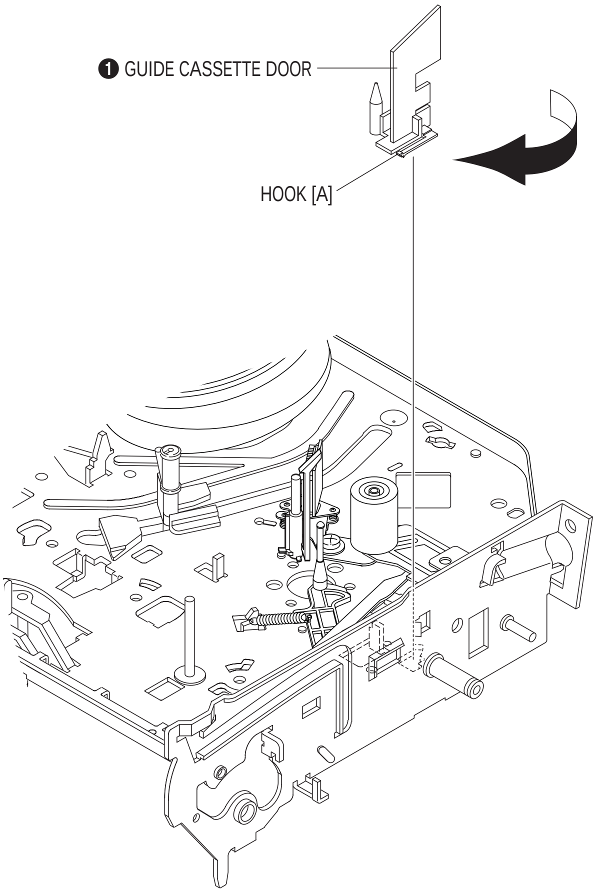

❶ GUIDE CASSETTE DOOR
HOOK [A]

Fig. 5-31 Guide Cassette Door Removal

5-4-19 Lever Unit Pinch Ass’y, Plate Joint, Spring Pinch Drive Removal

1) Lift the Unit Pinch Ass’y ❶.
2) Remove the Plate Joint ❷ from Lever Pinch Drive.
3) Remove the Spring Pinch Drive ❸.

Note :
1) Take extreme care not to touch the grease on the Roller Pinch.
2) When reinstalling, be sure to apply grease on the post pinch roller.

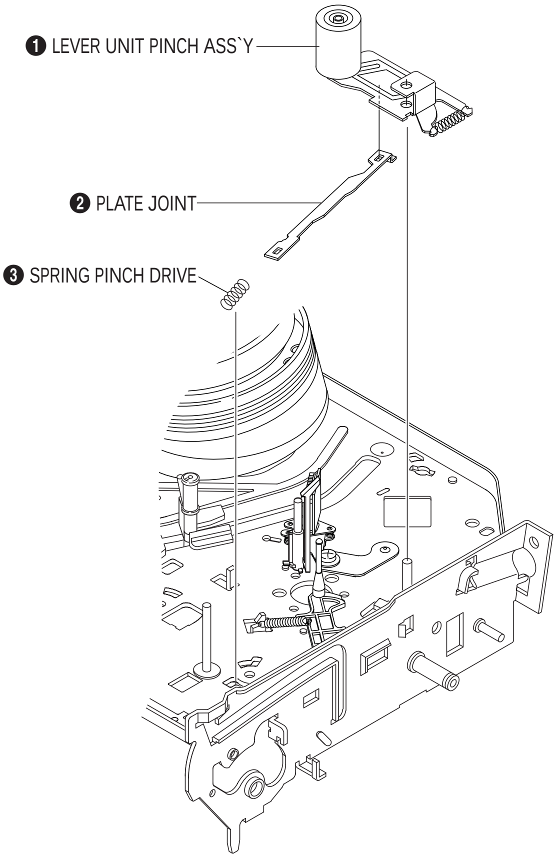

❶ LEVER UNIT PINCH ASS`Y
❷ PLATE JOINT
❸ SPRING PINCH DRIVE

Fig. 5-32 Lever Unit Pinch Ass’y, Plate Joint, Spring Pinch Drive Removal

5-4-20 Lever #9 Guide Ass’y Removal

1) Remove the Spring #9 Guide ❶.
2) Lift the Spring #9 Guide Ass’y ❷ in the direction of arrow “A”.

Note :
1) Take extreme care not to get grease on the tape Guide Post.
2) After reinstalling, check the bottom side of the Post #9 Guide to the top side of Main Base.

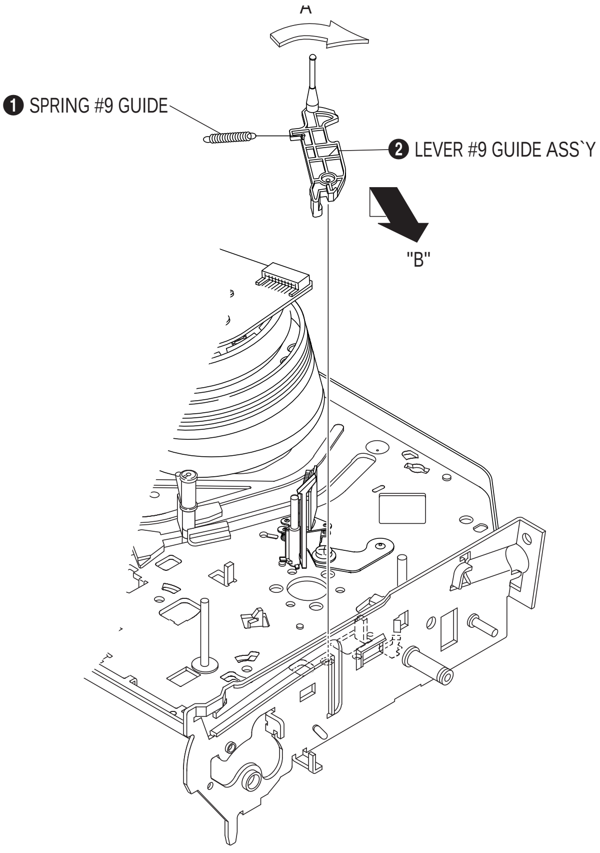

A
❶ SPRING #9 GUIDE
❷ LEVER #9 GUIDE ASS`Y
"B"

Fig. 5-33 Lever #9 Guide Ass’y Removal

5-4-21 FE Head Removal

1) Remove the screw ❶.
2) Lift the FE Head ❷.

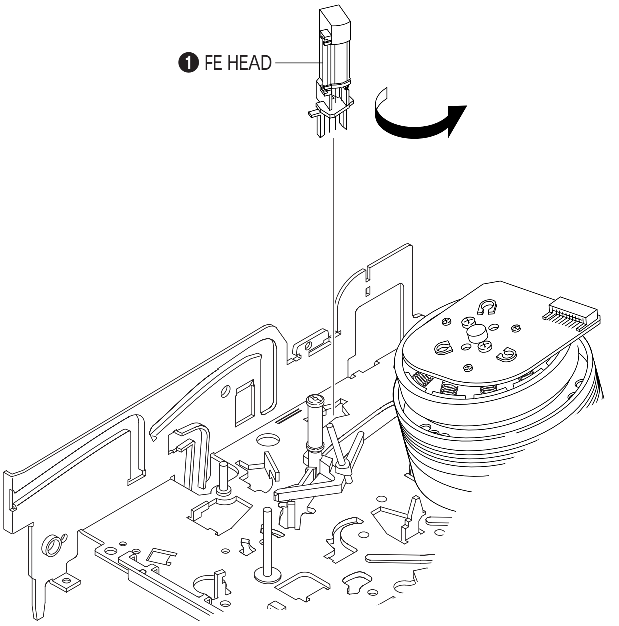


Fig. 5-34 FE Head Removal

5-4-22 ACE Head Removal

1) Pull out the FPC from connector of ACE Head Ass'y ❷.
2) Remove the screw ❶.
3) Lift the ACE Head Ass'y ❷.

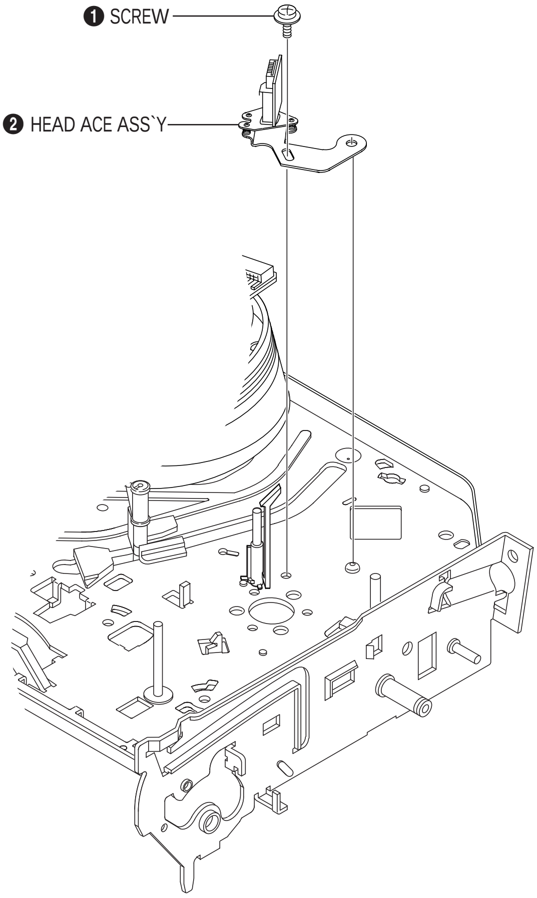

❶ SCREW
❷ HEAD ACE ASS`Y

Fig. 5-35 ACE Head Removal

5-4-23 Slider S, T Ass’y Removal

1) Move the Slider S, T Ass’y ❶, ❷ to slot, and then lift it to remove. (Refer to arrow)

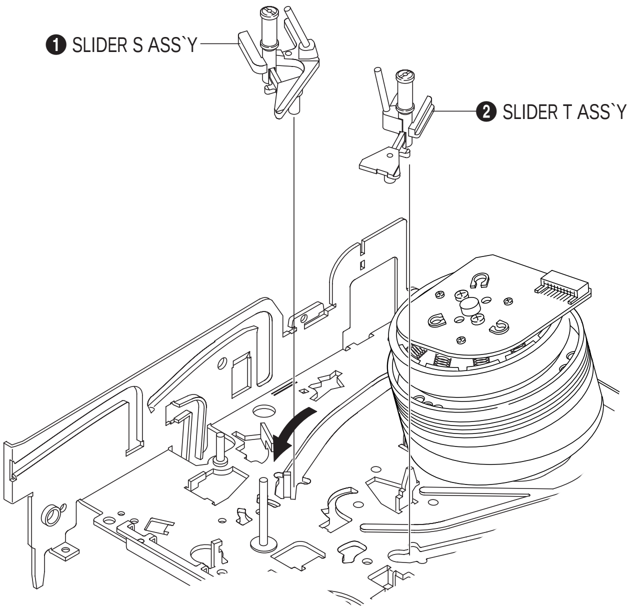


Fig. 5-36 Slider S, T Ass’y Removal

5-4-24 Plate Ground Deck, Cylinder Ass’y Removal

1) Remove the 3 Screws ❶.
2) Lift the Plate Ground Deck ❷.
3) Lift the Cylinder Ass’y ❸.

Assembly :

1) Match the 3 holes in the bottom of Cylinder ass'y ❸ to the 3 holes of Main Base as attending not to drop or knock the Cylinder ass'y ❸.
2) Tighten the 1 Screw ❶.
3) Match the Plate Ground Deck ❷ to the Hole of Base Main.
4) Tighten the other 2 Screws ❶.

Note :

1) Take care not to touch the Cylinder Ass'y ❸ and the tape guide post at reinstalling.
2) When reinstalling, Don't push down too much on Screw Driver.

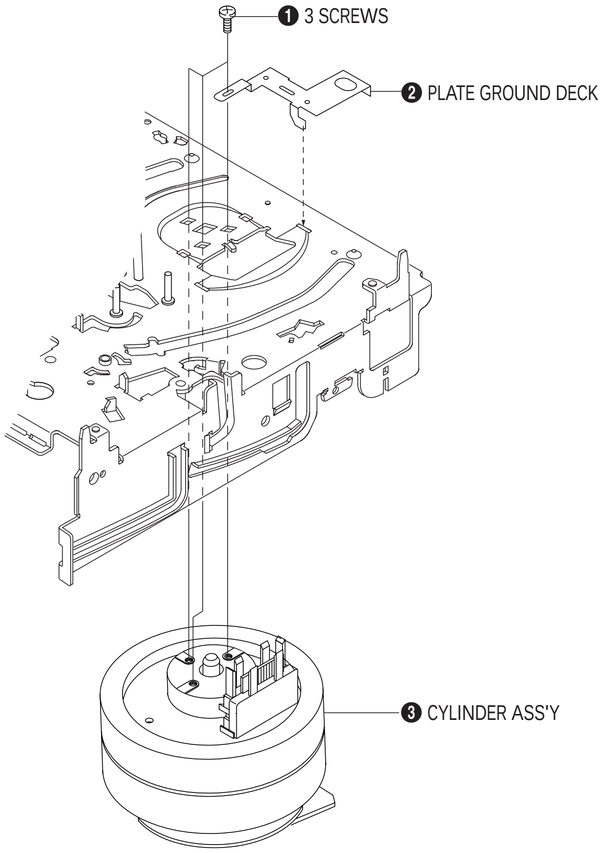


Fig. 5-37 Plate Ground Deck, Cylinder Ass’y Removal

5-4-25 Hook Capstan, Belt Pulley Removal

1) Remove the Hook Capstan ❶ after realeasing Hook in the direction arrow as shown in detail drawing.
2) Remove the Belt Pulley ❷.

Note : Take extreme care not to get grease on Belt Pulley ❷ at assembling or reassembling.

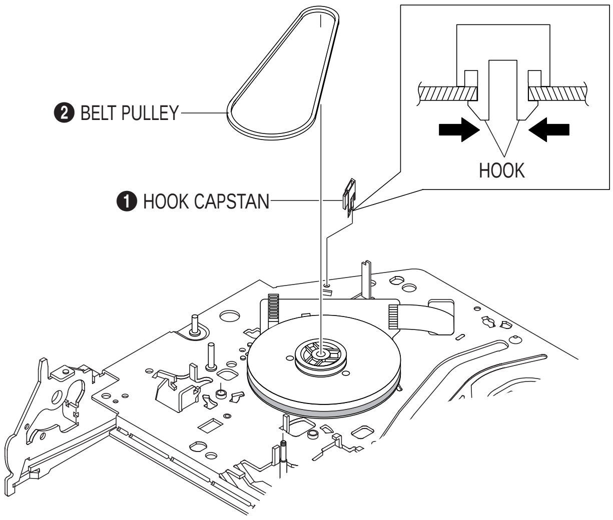


Fig. 5-38 Hook Capstan, Belt Pulley Removal

5-4-26 Motor Capstan Ass’y Removal

1) Remove the Damper Capstan ❶ in the direction of arrow.
2) Remove the 3 Screws ❷.
3) Remove the Motor Capstan Ass’y ❸.

Assembly :
1) Match the 3 holes of Motor Capstan Ass’y ❸ to the 3 holes of Main Base. Be careful not to drop or knock the Motor Capstan Ass'y ❸.
2) Tighten the 3 Screws ❷ in the direction of arrow as shown detail drawing.
3) Assemble the Damper Capstan ❶.

Note : After tightening screws, check if there is gap between the head of screws and the top side of Main Base. There should have no gap between the head of screws and the top side of Main Base.
After reinstalling, adjusting the tape transport system again.

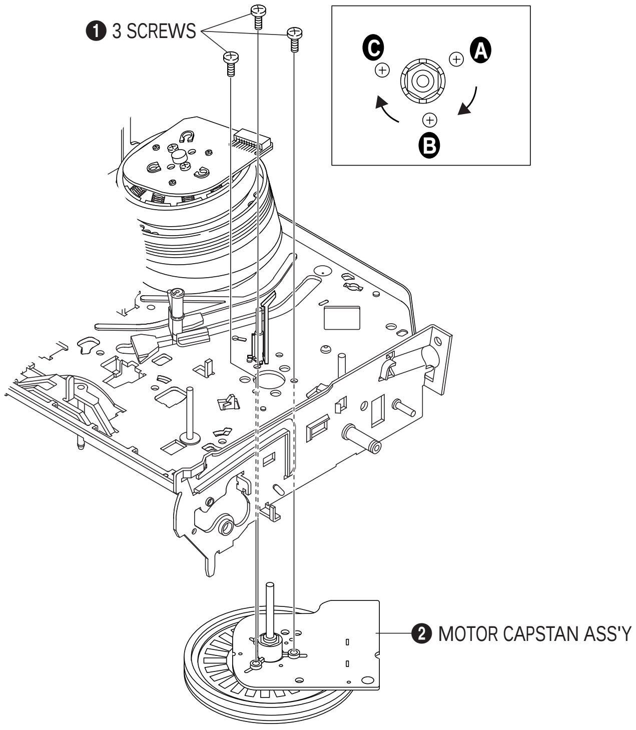


Fig. 5-39 Motor Capstan Ass’y Removal

5-4-27 Post #8 Guide Ass’y Removal

1) Rotate the Post #8 Guide Ass’y ❶ in the direction of arrow to lift up.

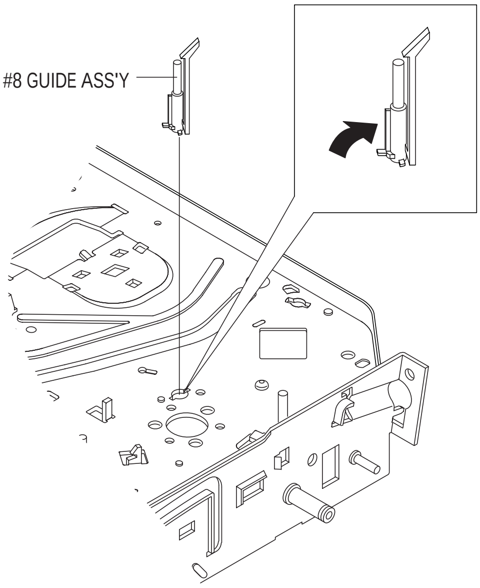


Fig. 5-40 Post #8 Guide Ass’y Removal

5-4-28 Level Head Cleaner Ass’y Removal (Optional)

1) Release the Hook ❶.
2) Lift the Lever Head Cleaner Ass’y ❷.

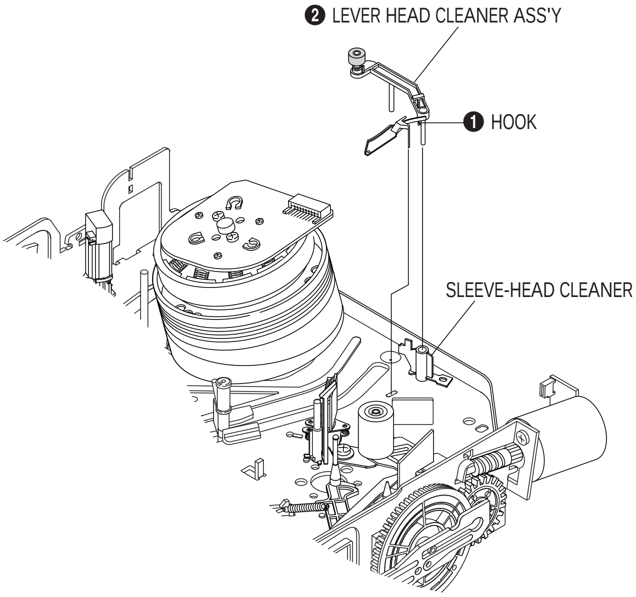


Fig. 5-41 Lever Head Cleaner Ass’y Removal

5-4-29 How to Eject the Cassette Tape (If the unit does not operate on condition that is inserted into housing ass’y)

1) Turn the Gear worm ❶ clockwise with screw driver.(Refer to arrow)
   (Other method : Remove the Screw of Motor Load Ass'y, Separate the Motor Load Ass'y)

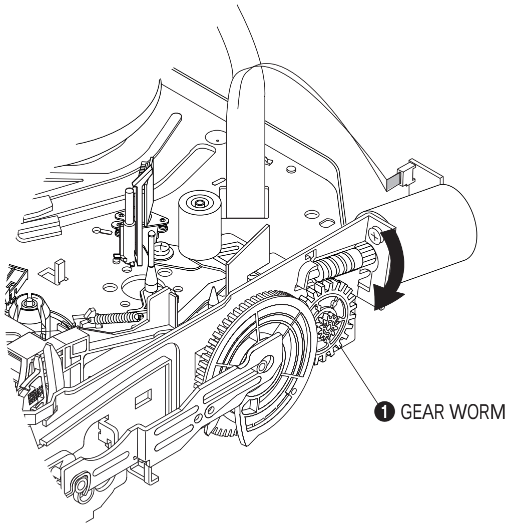


Fig. 5-42

2) When Slider S,T are approched in the position of unloading, rotate holder Clutch counterclockwise after inserting screw driver in the hole of frame's bottom in order to wind the unwinded tape. (Refer to Fig.5-43)
   (If you rotate Gear Worm ❶ continuously when tape is in state of unwinding, you may cause a tape contamination by grease and tape damage. Be sure to wind the unwinded tape in the state of set horizently.)
3) Rotate Gear Worm ❶ clockwise using screw driver again up to the state of eject mode and then pick out the tape.(Refer to Fig.5-42)

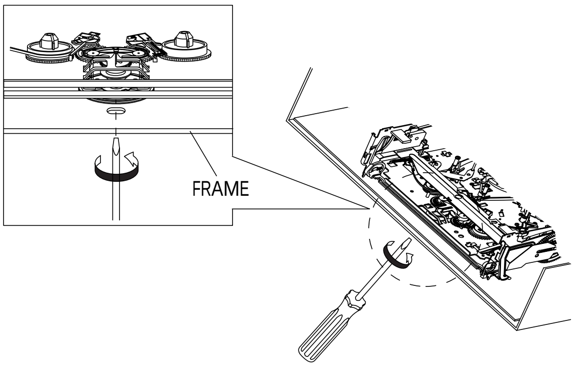


Fig. 5-43

5-5 The table of cleaning, Lubrication and replacement time about principal parts

1) The replacement time of parts is not life of parts.
2) The table 5-1 is that the VCR Set is in normal condition (normal temperature, normal humidity).
   The checking period may be changed owing to the condition of use, runtime and environmental conditions.
3) Life of the Cylinder Ass'y is depend on the condition of use.
4) See exploded view for location of each parts.

<Table 5-1>

*	Parts Name	Checking Period										Remark
		500	1000	1500	2000	2500	3000	3500	4000	4500	5000	
TAPE PATH SYSTEM	POST TENSION	Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ	- To clean the parts, use patch and alcohol (solvent). - After cleaning, use the video tape after alcohol is gone away completely. - We recommend to use oil [EP-50] or solvent. - One or two drops of oil should be applied after cleaning with alcohol.
	SLANT POST S, T	Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ	
	#8 GUIDE SHAFT	Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ	
	CAPSTAN SHAFT	Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ	
	#9 GUIDE POST	Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ	
	#3 GUIDE POST	Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ	
	GUIDE ROLLER S, T	Δ	Δ	Δ	O	O	O	O	O	O	O	
	CYLINDER ASS'Y	Δ	O	O	O	O	O	O	O	O	O	
	FE HEAD	Δ	Δ	Δ	O	O	O	O	O	O	O	
	ACE HEAD	Δ	O	O	O	O	O	O	O	O	O	
	PINCH ROLLER	Δ	O	O	O	O	O	O	O	O	O	
	POST REEL S, T		◆		◆		◆		◆		◆	- Periodic time of applying oil (Apply oil after cleaning) - The excessive applying oil may be the cause of malfunction.
	SLEEVE TENSION		◆		◆		◆		◆		◆	
	POST CENTER		◆		◆		◆		◆		◆	
	LEVER IDLE BOSS (2Point)		◆		◆		◆		◆		◆	
DRIVING SYSTEM	CAPSTAN MOTOR PULLEY	Δ	Δ	Δ	Δ	Δ	O	O	O	O	O	
	BELT PULLEY				O	O	O	O	O	O	O	
	HOLDER CLUTCH ASS'Y	Δ	O	O	O	O	O	O	O	O	O	
	GEAR CENTER ASS'Y		O	O	O	O	O	O	O	O	O	
	GEAR IDLE (2Point)		O	O	O	O	O	O	O	O	O	
	LOADING MOTOR		O	O	O	O	O	O	O	O	O	
BRAKE SYSTEM	BAND BRAKE ASS'Y		O	O	O	O	O	O	O	O	O	
	BRAKE T ASS'Y		O	O	O	O	O	O	O	O	O	

Δ : Cleaning   O : Check and replacement in necessary   ◆ : Add Oil

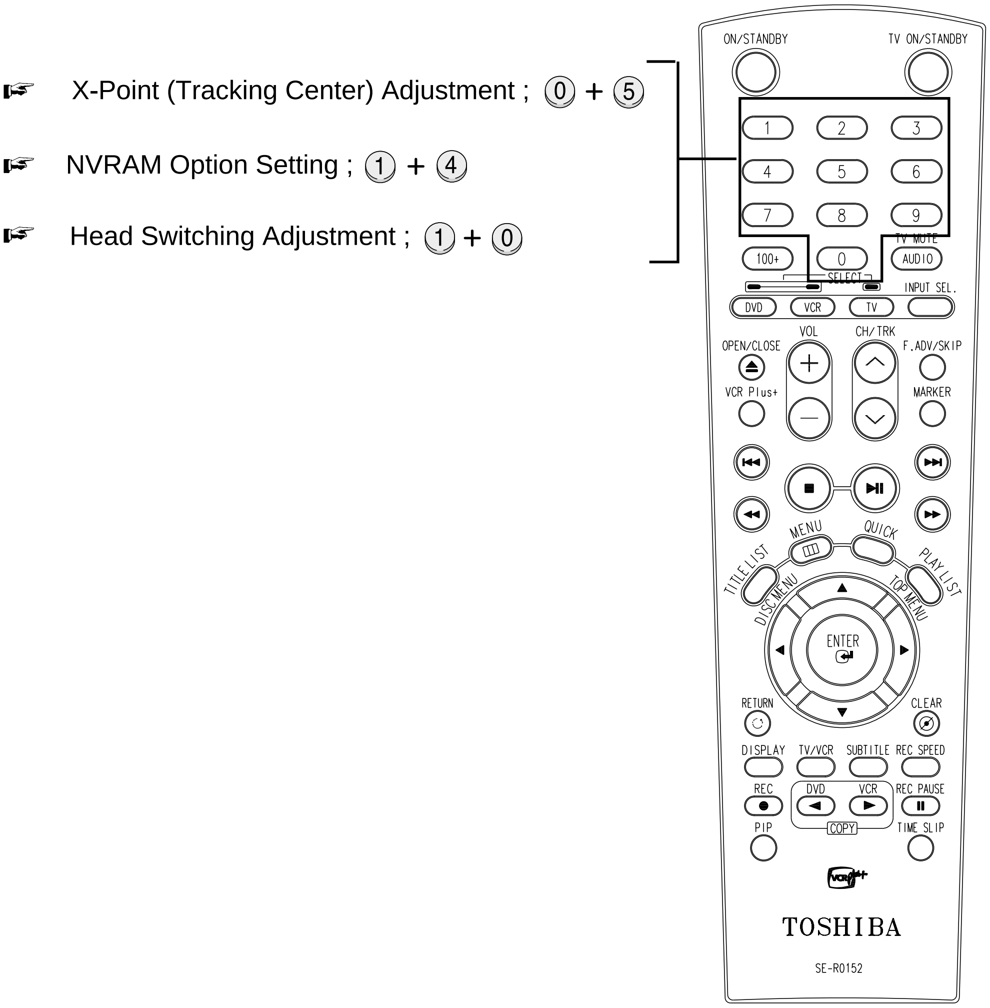
6. Alignment and Adjustments

6-1 VCR Adjustment

6-1-1 Reference

1) X-Point (Tracking center) adjustment, “Head switching adjustment” and “NVRAM option setting” can be adjusted with remote control.
2) When replacing the Main PCB Micom (IC601) and NVRAM (IC603 ; EEPROM) be sure to adjust the “Head switching adjustment” and “NVRAM option setting”.
3) When replacing the cylinder ass’y, be sure to adjust the “X-Point” and “Head switching adjustment”.
4) How to adjust.
   - Intermittently short-circuit the Test Point on Main PCB with pincers to the adjustment mode.
   - If the corresponding adjustment button is pressed, the adjustment is performed automatically.
   - When the adjustment is completed, be sure to turn the power off.

6-1-1(a) Location of adjustment button of remote control



☞ X-Point (Tracking Center) Adjustment ; ⓪ + ⑤

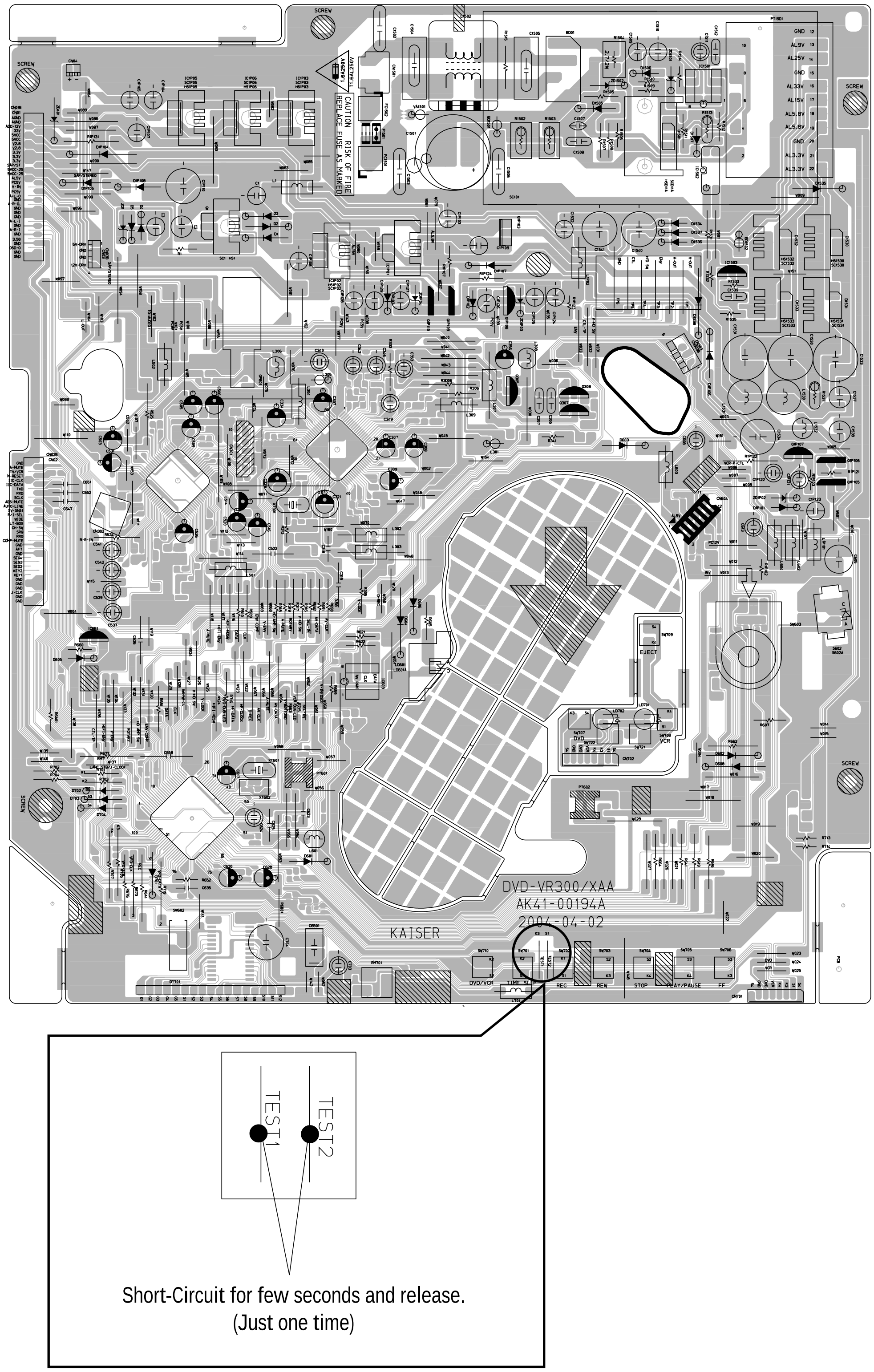
☞ NVRAM Option Setting ; ① + ④

☞ Head Switching Adjustment ; ① + ⓪

ON/STANDBY
TV ON/STANDBY
1
2
3
4
5
6
7
8
9
100+
0
TV MUTE
AUDIO
SELECT
INPUT SEL.
DVD
VCR
TV
VOL
CH/TRK
OPEN/CLOSE
F.ADV/SKIP
VCR Plus+
MARKER
MENU
QUICK
TITLE LIST
PLAY LIST
DISC MENU
TOP MENU
ENTER
RETURN
CLEAR
DISPLAY
TV/VCR
SUBTITLE
REC SPEED
REC
DVD
VCR
REC PAUSE
PIP
COPY
TIME SLIP
TOSHIBA
SE-R0152

Fig. 6-1

6-1-1(b) TEST location for adjustment mode setting


DVD-VR300/XAA
AK41-00194A
2004-04-02
KAISER
EJECT
DVD/VCR
TIME
REC
REW
STOP
PLAY/PAUSE
FF
TEST1
TEST2

Short-Circuit for few seconds and release.
(Just one time)

Fig. 6-2 VCR Main PCB (Top View)

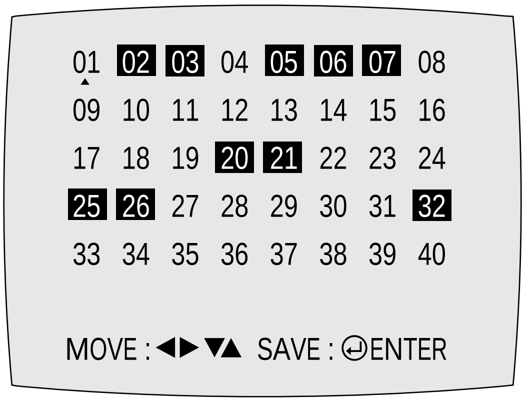
6-1-2 Head Switching Point Adjustment

1) Playback the alignment tape.
2) Intermittently short-circuit the two Test Points on VCR Main PCB while setting the adjustment mode. (See Fig. 6-2)
3) Press the “1, 0” buttons; remote control adjustment operates automatically. (See Fig. 6-1)

6-1-3 NVRAM Option Setting

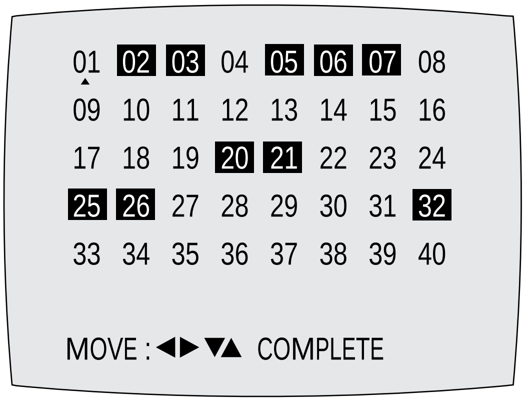
1) NVRAM Option is adjusted in the factory.
2) In case Main PCB Micom (IC601) and NVRAM (IC603 ; EEPROM) are replaced, be sure to set the corresponding option number of the required model. (If the option is not set, the unit will not operate.)

1) Intermittently short-circuit the two Test Points on VCR Main PCB. (See Fig. 6-2)
2) Press the “1, 4” button on the remote control. The option setting appears. (See Fig. 6-3)
3) Select the option number (See table 6-1) of corresponding model with “◀, ▶, ▲, ▼” buttons on the remote control.
4) After selecting the option number is completed, press the “▲” button of remote control. (If “▲” button is pressed, the selected number is changescolor. ; See Fig. 6-4)
5) Press the “ENTER” button of remote control again to store the option number.
6) Turn the Power off.



01 02 03 04 05 06 07 08
09 10 11 12 13 14 15 16
17 18 19 20 21 22 23 24
25 26 27 28 29 30 31 32
33 34 35 36 37 38 39 40

Fig. 6-3



01 02 03 04 05 06 07 08
09 10 11 12 13 14 15 16
17 18 19 20 21 22 23 24
25 26 27 28 29 30 31 32
33 34 35 36 37 38 39 40

Fig. 6-4

<Table 6-1 NVRAM Option Table>

MODEL	OPTION NUMBERS
D-VR3SU, D-VKR3SU	2, 3, 5, 6, 7, 20, 21, 25, 26, 32
D-VR3SC	2, 3, 5, 6, 7, 16, 20, 21, 25, 26, 32

6-2 VCR Mechanical Adjustment

6-2-1 Tape Transport System and Adjustment Locations

The tape transport system has been adjusted precisely in the factory. Alignment is not necessary except for the following :
1) Noise observed on the screen.
2) Tape damage.
3) Parts replacement in the tape transport system.

Lower flange height of tape guide is used as the reference for the transport adjustment.
To maintain the height of the tape guide and prevent damage, do not apply excessive force onto the main base.

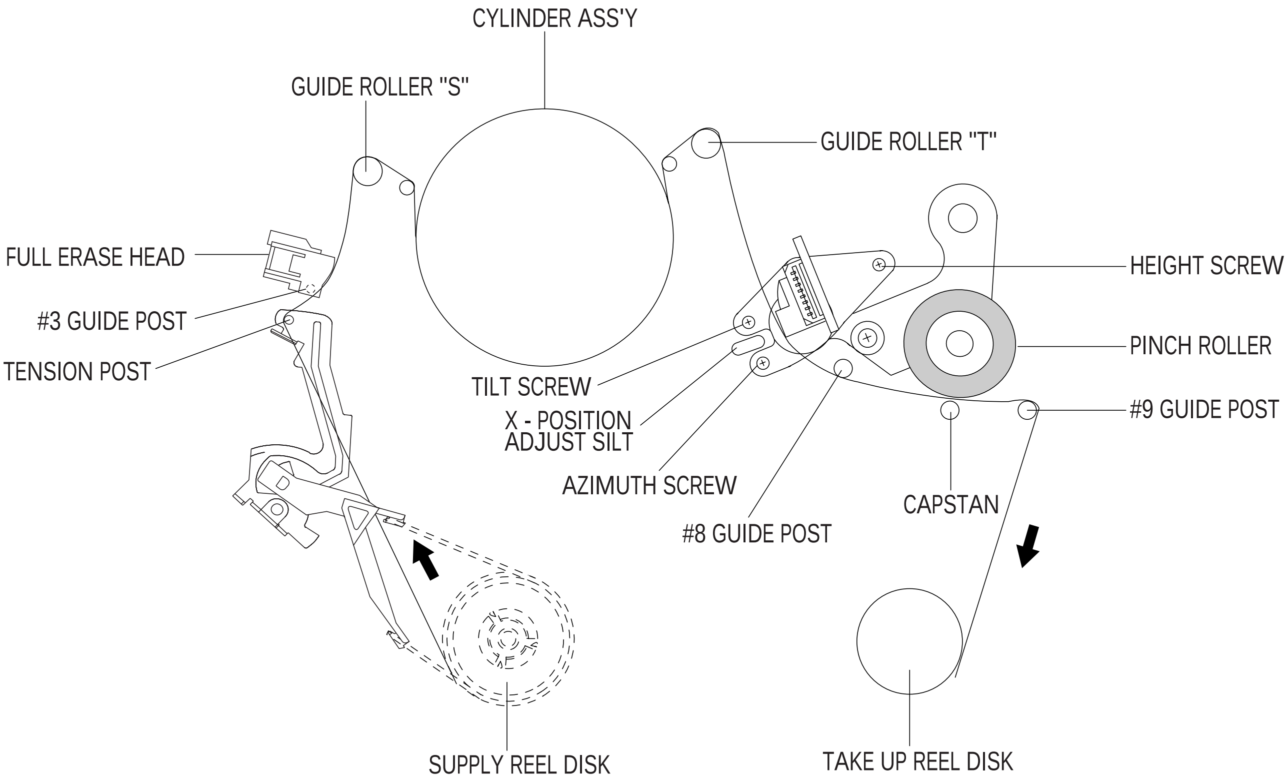

CYLINDER ASS'Y
GUIDE ROLLER "S"
GUIDE ROLLER "T"
FULL ERASE HEAD
HEIGHT SCREW
#3 GUIDE POST
PINCH ROLLER
TENSION POST
TILT SCREW
#9 GUIDE POST
X - POSITION ADJUST SILT
AZIMUTH SCREW
CAPSTAN
#8 GUIDE POST
SUPPLY REEL DISK
TAKE UP REEL DISK

Fig. 6-5 Location of Tape Transport Adjustment

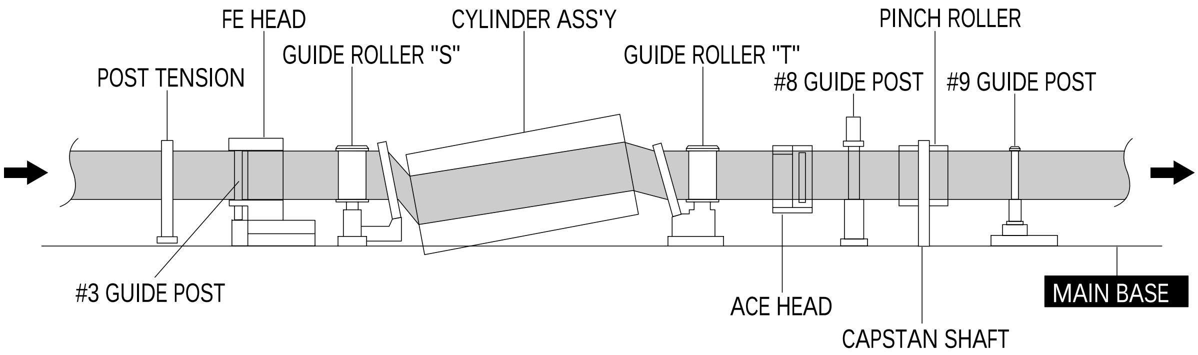

FE HEAD
CYLINDER ASS'Y
PINCH ROLLER
GUIDE ROLLER "S"
GUIDE ROLLER "T"
POST TENSION
#8 GUIDE POST
#9 GUIDE POST
#3 GUIDE POST
MAIN BASE
ACE HEAD
CAPSTAN SHAFT

Fig. 6-6 Tape Travel Diagram

6-2-2 Tape Transport System Adjustment

When parts are replaced, perform the required adjustments by referring to procedures for the tape transport system. If there are any changes to the tape path, first run a T-120 tape and make sure excessive tape wrinkle does not occur at the tape guides.

◆ If tape wrinkle is observed at the guide roller S, T, turn the guide roller S, T until wrinkle disappears.
◆ If the tape wrinkle is still observed at the tape guide, perform the tilt adjustment of the ACE head.

(1) ACE Head Assembly Adjustment

a. ACE HEAD HEIGHT ADJUSTMENT

1) Run the alignment tape (Color bar) in the playback mode.
2) Observe surface of the audio head using a dental mirror.
3) Turn screw (C) clockwise or counterclockwise until the gap of lower tape edge and the lower edge of the control head is about 0.25mm. (Refer to Fig. 6-7 and 6-8)

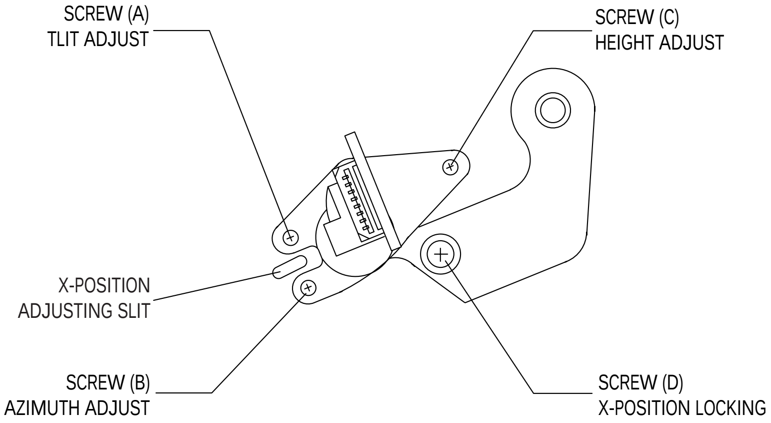

SCREW (A)
TLIT ADJUST
SCREW (C)
HEIGHT ADJUST
X-POSITION
ADJUSTING SLIT
SCREW (B)
AZIMUTH ADJUST
SCREW (D)
X-POSITION LOCKING

Fig. 6-7 Location of ACE Head Adjustment Screw

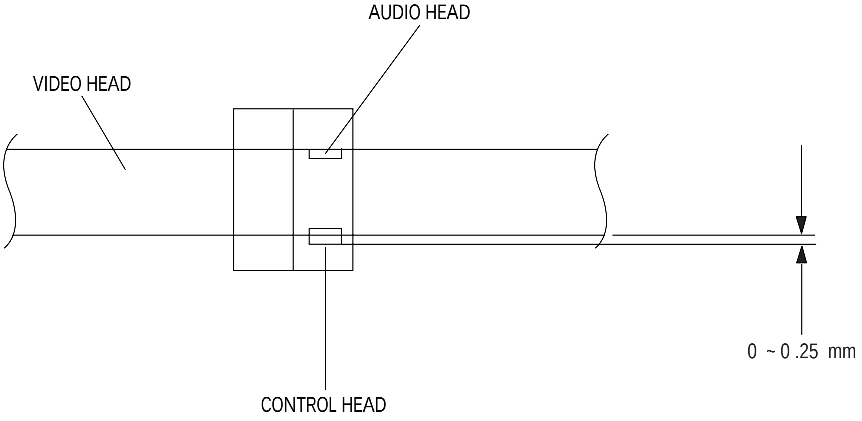

AUDIO HEAD
VIDEO HEAD
0 ~ 0 .25 mm
CONTROL HEAD

Fig. 6-8 ACE Head Height Adjustment

b. ACE HEAD TILT ADJUSTMENT

1) Playback a blank tape and observe the position of the tape at the lower flange of tape guide.
2) Confirm that there is no curl or wrinkle at the lower flange of tape guide as shown in Fig. 6-9 (B).
3) If a curl or wrinkle of the tape occurs, slightly turn the screw (A) tilt adjust on the ACE head ass'y.
4) Reconfirm the ACE head height.

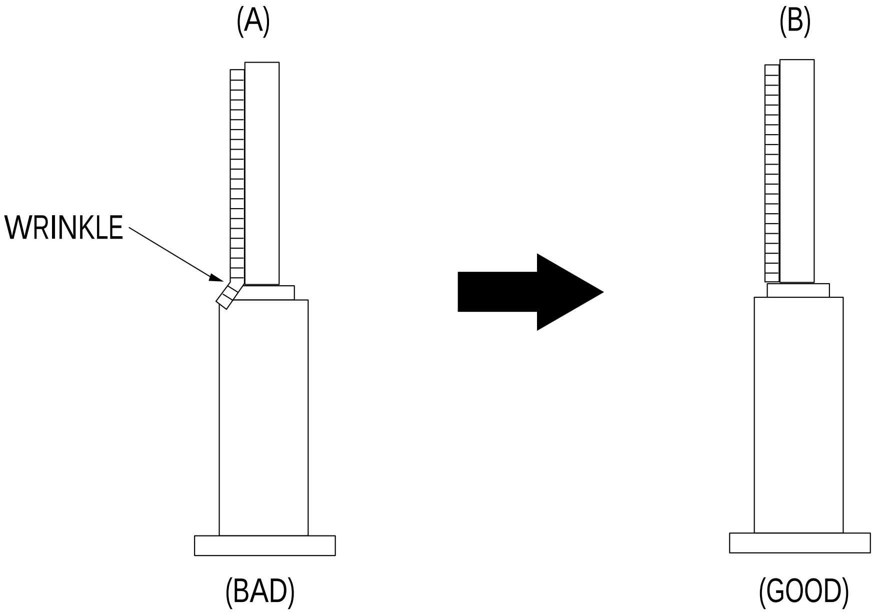


Fig. 6-9 Tape Guide Check

c. AUDIO AZIMUTH ADJUSTMENT

1) Load alignment tape (Mono scope) and playback the 7KHz signal.
2) Connect channel-1 scope probe to audio output.
3) Adjust screw (B) to achieve maximum audio level. (See Fig. 6-7)

d. ACE HEAD POSITION (X-POINT) ADJUSTMENT

1) Playback the alignment tape (Color bar)
2) Intermittently short-circuit the two Test Points on VCR Main PCB. (See Fig. 6-2)
3) Press the “0, 5” remote control buttons, then adjustment operates automatically. (See Fig. 6-1)
4) Connect the CH-1 probe to “Envelope” the CH-2 probe to “H’D switching pulse” and then trigger to CH-1.
5) Insert the (-) driver into the X-Point adjustment hole and adjust it so that envelope waveform is maximum.

Test point : TP2 (Audio Output)
TP3 (Envelope)
TP4 (H’D S/W -Trigger)
TP5 (Control Pulse)

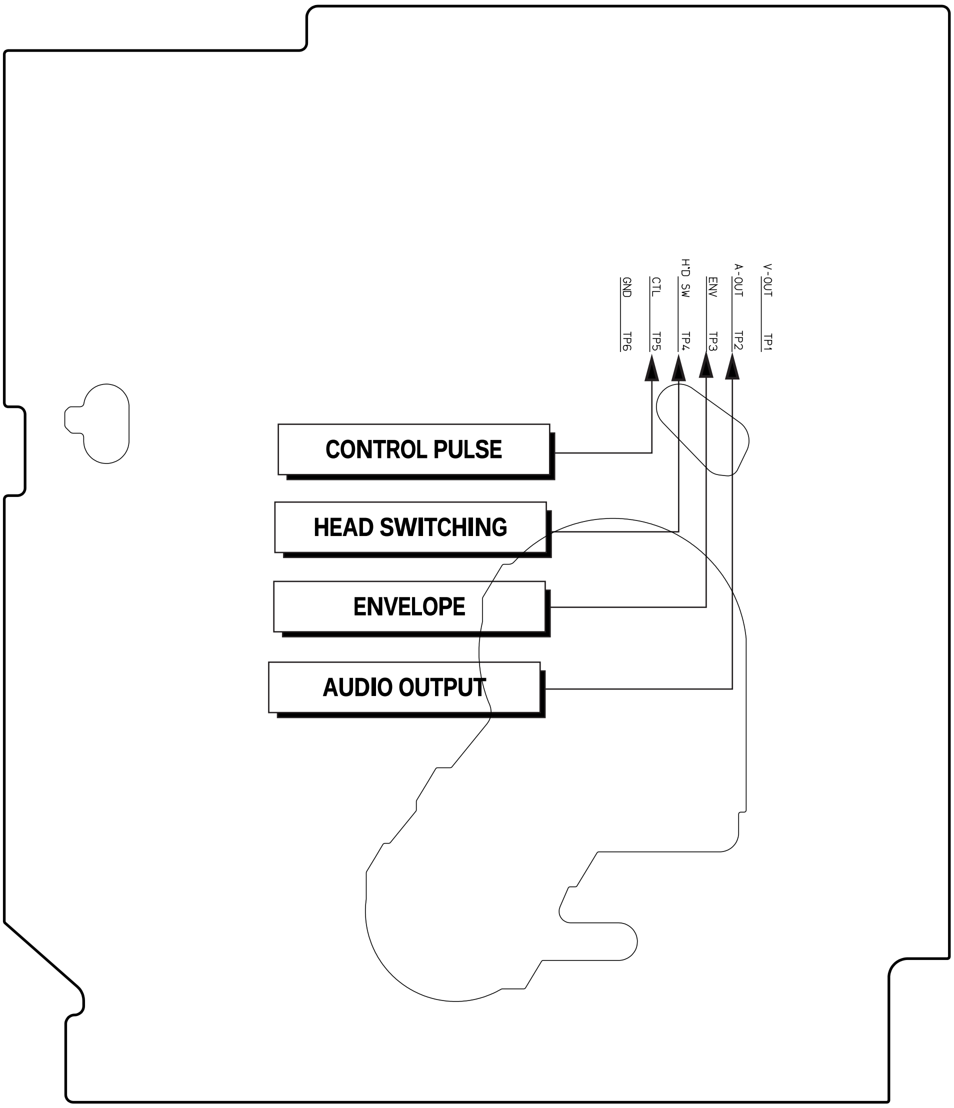

GND TP6
CTL TP5
H’D SW TP4
ENV TP3
A-OUT TP2
V-OUT TP1
CONTROL PULSE
HEAD SWITCHING
ENVELOPE
AUDIO OUTPUT

Fig. 6-10 Location of Test point (VCR Main PCB-Top View)

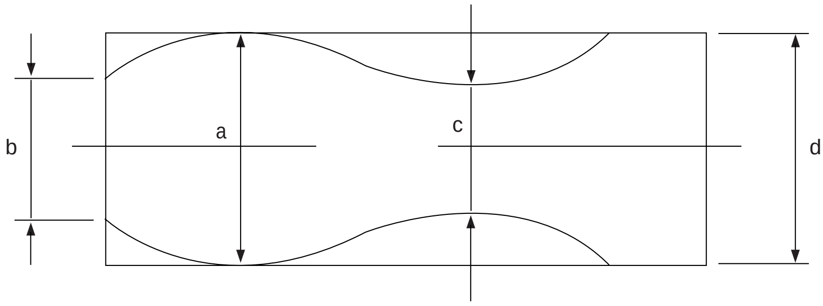
(2) Linearity adjustment (Guide roller S, T adjustment)

1) Playback the Mono Scope alignment tape (SP mode).
2) Observe the video envelope signal on an oscilloscope (triggered by the video switching pulse).
3) Make sure the video envelope waveform (at its minimum) meets the specification shown in Fig. 6-11.
If it does not, adjust as follows :

Note :

a=Maximum output of the video RF envelope.
b=Minimum output of the video RF envelope at the entrance side.
c=Minimum output of the video RF envelope at the center point.
d=Maximum output of the video RF envelope at the exit side.

4) If the section A in Fig. 6-12 does not meet the specification, adjust the guide roller S up or down.
5) If the section B in Fig. 6-12 does not meet the specification, adjust the guide roller T up or down.



a b c d

c,b,d/a ≧ 63%

Fig. 6-11 Envelope Waveform Adjustment

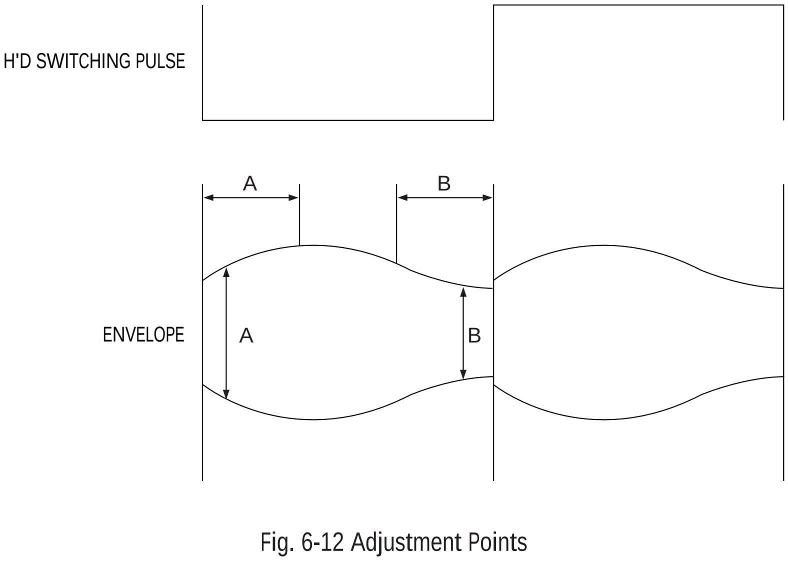


Fig. 6-12 Adjustment Points

6) Play back the Mono Scope alignment tape (SP mode).
7) Connect an oscilloscope CH-1 to the “Envelope” and CH-2 to the “H’D SW Pulse” for triggering.
8) Turn the guide roller heads with a flat head (▬) driver to obtain a flat video RF envelope as shown in Fig. 6-13.

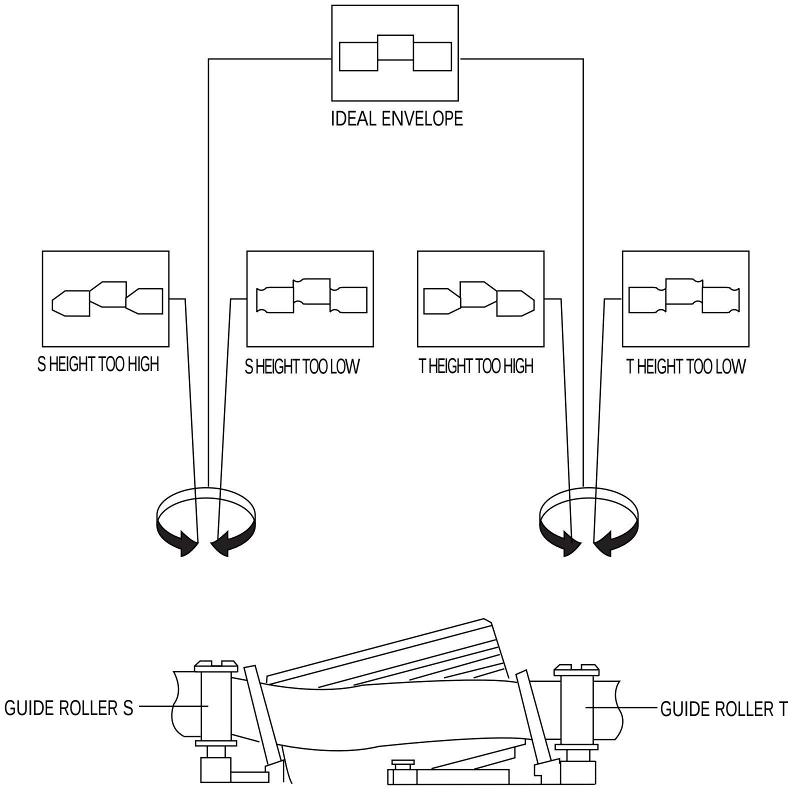

IDEAL ENVELOPE
S HEIGHT TOO HIGH
S HEIGHT TOO LOW
T HEIGHT TOO HIGH
T HEIGHT TOO LOW
GUIDE ROLLER S
GUIDE ROLLER T

Fig. 6-13 Guide Roller S, T Height Adjustment

(3) Check Transitional Operation from RPS to Play

Check transition from RPS mode to play mode : Using a pre-recorded SP tape, make sure the entry side of envelope comes to an appropriate steady state within 3 seconds (as shown in Fig. 6-14).
If the envelope waveform does not reach specified peak-to peak amplitude within 3 seconds, adjust as follows :

1) Make sure there is no gap between the supply roller lower flange and the tape.
   If there is a gap, adjust the supply guide roller again.
2) Change operation mode from the RPS to the play mode (again) and make sure the entry side of envelope rises within 3 seconds.

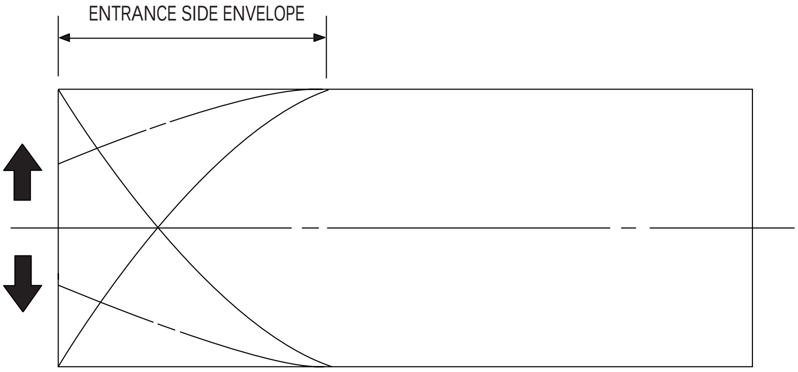


Fig. 6-14 Video Envelope Rising when Operation mode Changes from RPS to Play Mode

(4) Envelope Check

1) Make recordings on T-120 (E-120) and T-160 (E-180) tape.
   Make sure the playback output envelope meets the specification as shown in Fig. 6-15.
2) Play back a self recorded tape (recording made on the unit using with T-120 (E-120).
   The video envelope should meet the specification as shown in Fig. 6-15.
   In SP mode, (A) should equal (B).
   If the head gap is wide, upper cylinder should be checked.

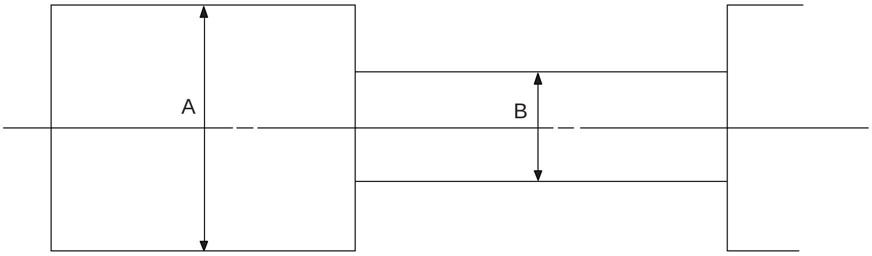


Fig. 6-15 Envelope Input and Output Level

(5) Tape Wrinkle Check

1) Run the T-160 (E-180) tape in the playback, FPS, RPS and Pause modes and observe tape wrinkle at each guide.
2) If excessive tape wrinkle is observed, perform the following adjustments in Playback mode :

◆ Tape wrinkle at the guide roller S, T section : Linearity adjustment.

◆ Tape wrinkle at tape guide flange : ACE head assembly coarse adjustment.

6-2-3 Reel Torque

1) The rotation of the capstan motor causes the holder clutch ass'y to rotate through the belt pulley.
2) The spring wrap PLAY/REV of holder clutch ass'y drives the disk reel S, T through gear idler by rotation of gear center ass'y.
3) Brake is operated by slider cam at FF/REW mode.
4) Transportation of accurate driving force is done by gears. (Gear Center Ass'y)

Note : If the spec. does not meet the followings specifications, replace the holder clutch ass'y and then recheck.

<Table 6-2>

MODE	TORQUE g/cm	GAUGE
PB	42 ± 11	Cassette Torquemeter
RPS	145 ± 30	Cassette Torquemeter

7. Circuit Operating Descriptions

7-1 Power

7-1-1 About S.M.P.S

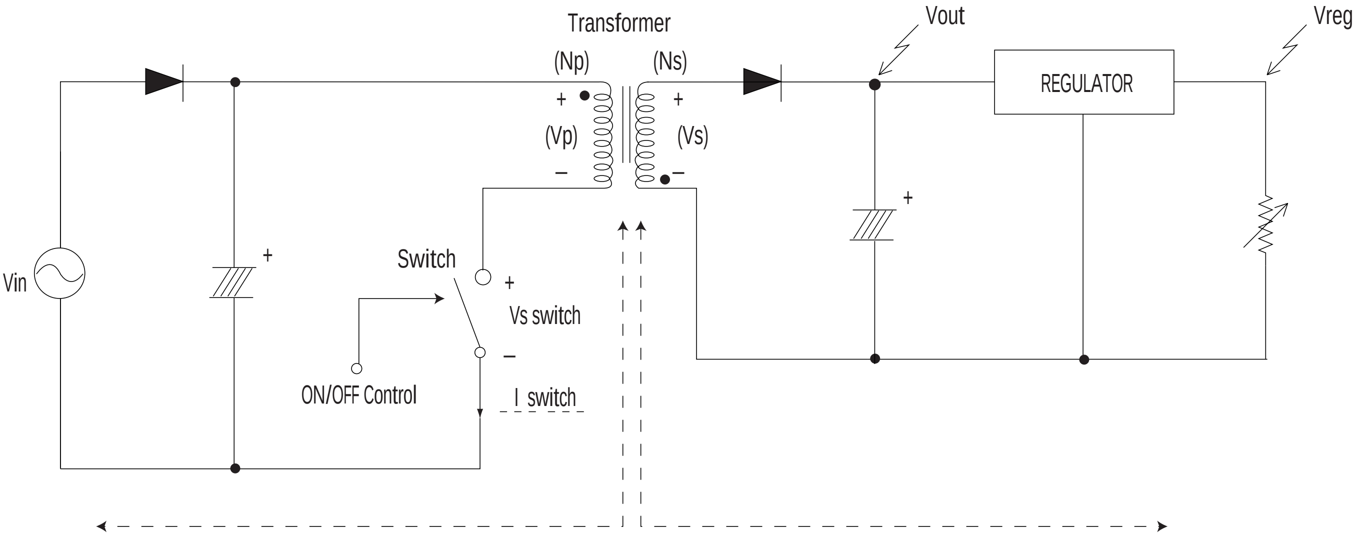

Transformer
(Np)
(Ns)
+
(Vp)
−
+
(Vs)
−
Vout
Vreg
REGULATOR
+
Vin
+
Switch
+
Vs switch
−
ON/OFF Control
I switch

Fig. 7-1

◆Terms

1) 1st : Common power input to 1st winding.
2) 2nd : Circuit followings output winding of transformer.
3) f (Frequency) : Switching frequency (T : Switching cycle)
4) Duty : (Ton / T) x 100

7-1-2 Circuit description Control

(a) AC Power Rectification/Smoothing Terminal
   1) BD01 : Convert AC power to DC (Wave rectification).
   2) CIS01 : Smooth the voltage converted to DC.
   3) L1S02, C1S04, C1S05 : Noise removal at power input / output.
   4) R1S04 : Rush current limit resistance at the momemt of power cord insertion.
      · Without R1S04, the bridge diode might be damaged as the rush current increases.
(b) SNUBBER Circuit : R1S02, R1S03, C1S08, C1S07, D1S05

1) Prevent residual high voltage at the terminals of switch during switch off/Suppress noise.
High inverted power occurs at switch off, because of the 1st winding of transformer : (V=-L1 xdi/dt. L1 : Leakage Induction)
A very high residual voltage exist on both terminals of Q1S01 because dt is a very short.

2) SNUBBER circuit protects Q1S01 from damage through leakage voltage suppression by RC, (Charges the leakage voltage to D1S05 and C1S08 and discharges to R1S02, R1S03).
3) C1S38 : For noise removal

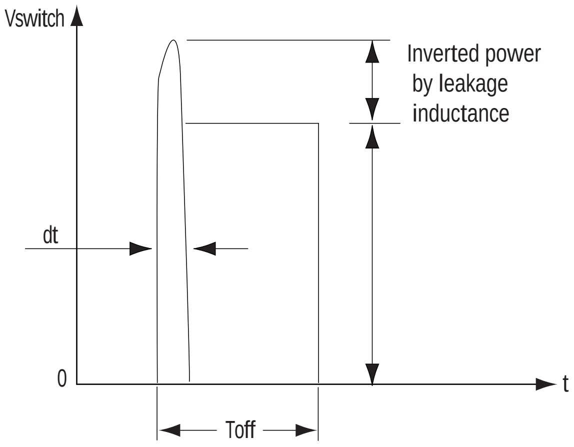


Fig. 7-2

(c) IC1S01 Vcc circuit

1) R1S05, R1S07, R1S08 : IC1S01 driving resistance (IC1S011 works through driving resistance at power cord in)
2) IS1S01 Vcc : R1S06, D1S07, C1S09
① Use the output of transformer as Vcc,because the current starts to flow into transformer while IC1S01 is active
② Rectify to D1S07 and smooth to C1S09.
③ Use the output of transformer as IC1S01 Vcc : The loads are different before and after IC1S01 driving. (Vcc of IC1S01 decreases below OFF voltage , using only the resistance dut to lode increase after IC1S01 driving.)

(d) Feedback Control Circuit

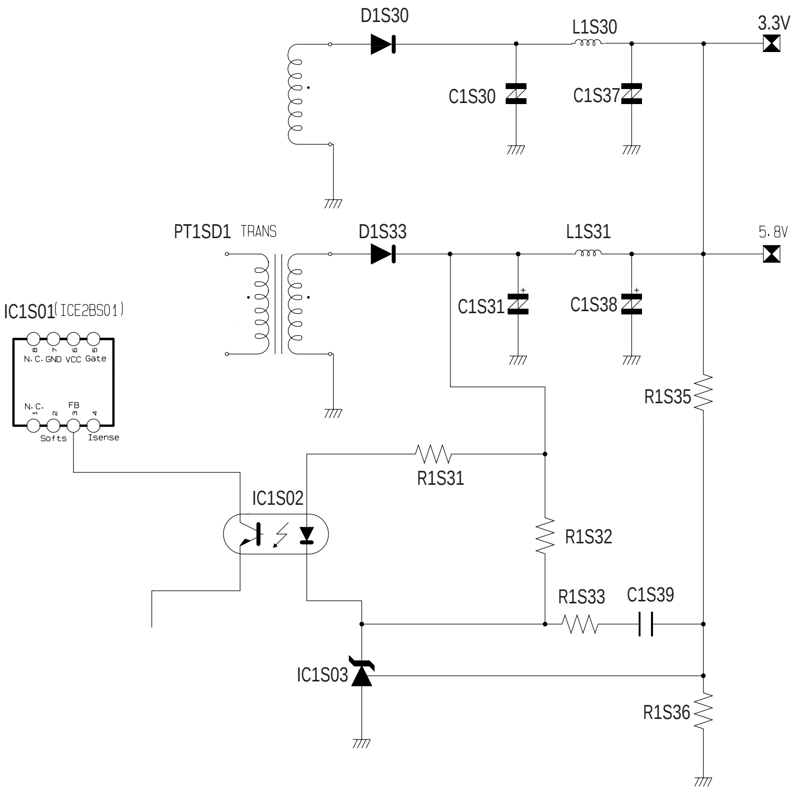

D1S30
L1S30
3.3V
C1S30
C1S37
PT1SD1 TRANS
D1S33
L1S31
5.8V
IC1S01(ICE2BS01)
8 7 6 5
N.C. GND VCC Gate
N.C. FB
1 2 3 4
Softs Isense
C1S31
C1S38
R1S35
R1S31
IC1S02
R1S32
R1S33
C1S39
IC1S03
R1S36

Fig. 7-3

1) F/B terminal of IC1S01 determines output duty cyle.

2) C-E (Collector-Emitter) of IC1S01 and F/B potential of IC1S01 are same.

7-1-3 Internal Block Diagram (Internal Block Diagram of S.M.P.S. Circuit)

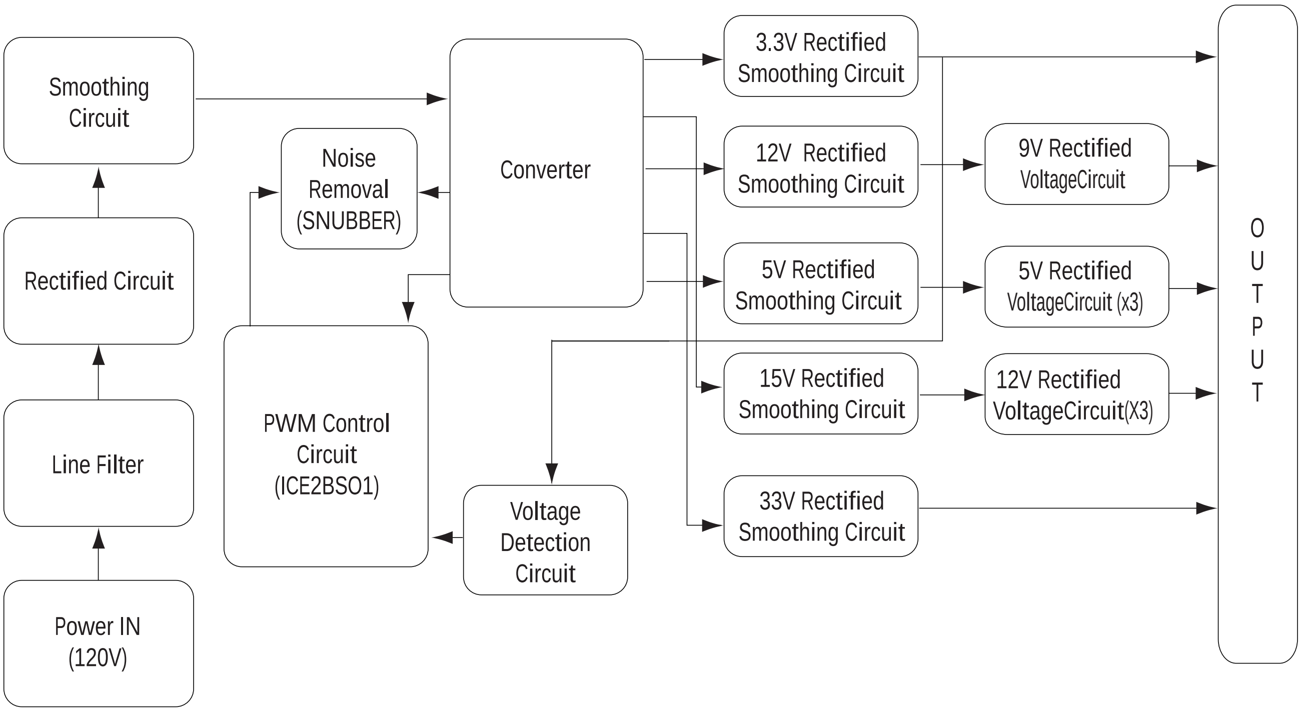

Smoothing Circuit
Rectified Circuit
Line Filter
Power IN (120V)
Noise Removal (SNUBBER)
Converter
PWM Control Circuit (ICE2BSO1)
Voltage Detection Circuit
3.3V Rectified Smoothing Circuit
12V Rectified Smoothing Circuit
5V Rectified Smoothing Circuit
15V Rectified Smoothing Circuit
33V Rectified Smoothing Circuit
9V Rectified VoltageCircuit
5V Rectified VoltageCircuit (x3)
12V Rectified VoltageCircuit(X3)
OUTPUT

Fig. 7-4

7-2 AV Codec

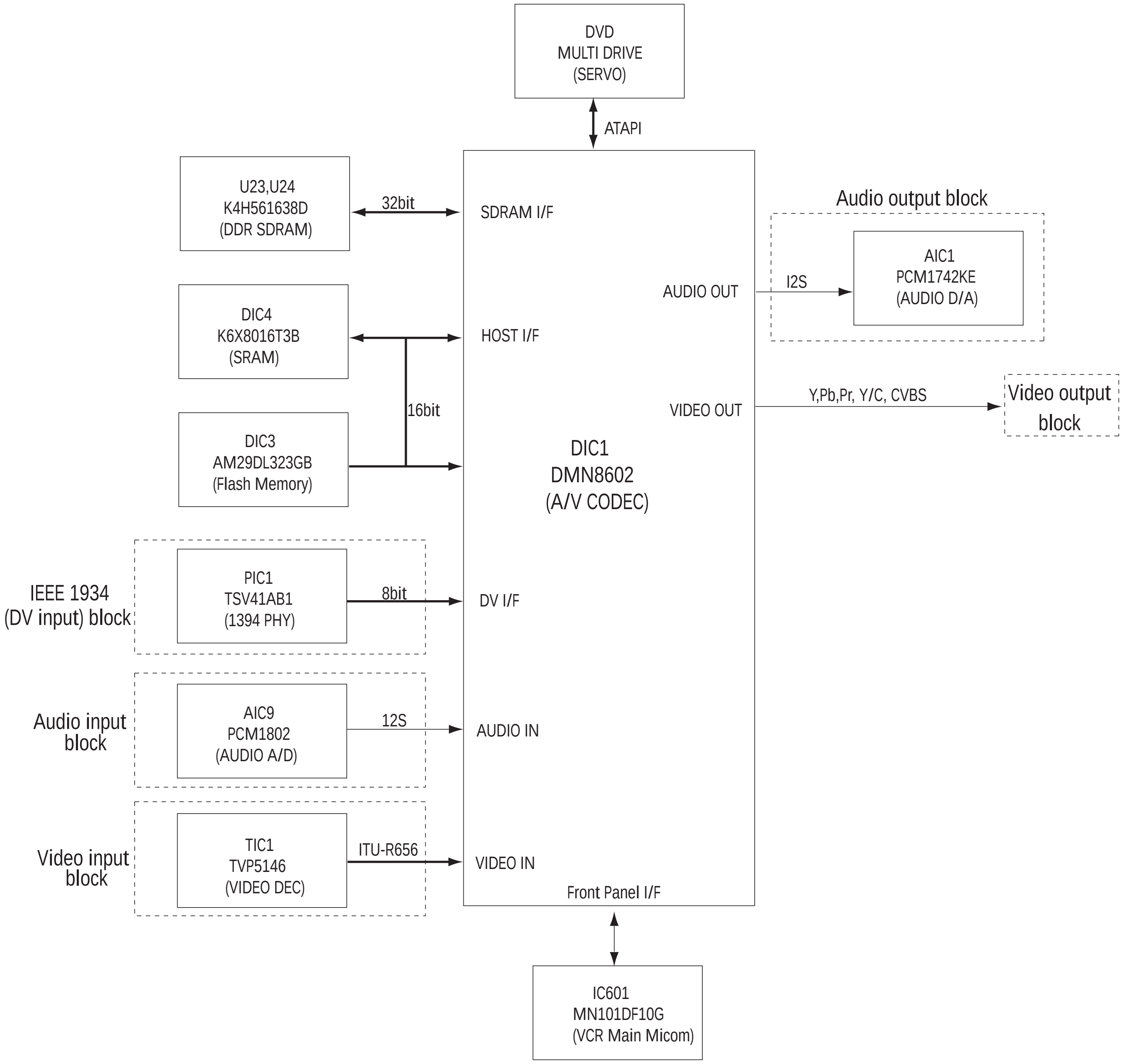

DVD
MULTI DRIVE
(SERVO)
ATAPI
U23,U24
K4H561638D
(DDR SDRAM)
32bit
SDRAM I/F
Audio output block
AIC1
PCM1742KE
(AUDIO D/A)
I2S
AUDIO OUT
DIC4
K6X8016T3B
(SRAM)
HOST I/F
16bit
VIDEO OUT
Y,Pb,Pr, Y/C, CVBS
Video output block
DIC3
AM29DL323GB
(Flash Memory)
DIC1
DMN8602
(A/V CODEC)
IEEE 1934
(DV input) block
PIC1
TSV41AB1
(1394 PHY)
8bit
DV I/F
Audio input block
AIC9
PCM1802
(AUDIO A/D)
12S
AUDIO IN
Video input block
TIC1
TVP5146
(VIDEO DEC)
ITU-R656
VIDEO IN
Front Panel I/F
IC601
MN101DF10G
(VCR Main Micom)

Fig. 7-5

· Main system control
· A / V Encoding / Decoding
· Transcoding / rating
· IEEE 1394 link layer function

· ATAPI interface with DVD-Multi Drive
· Analog Progressive / interlaced video output

7-2-1 DIC1 Processor Internal Architecture Diagram

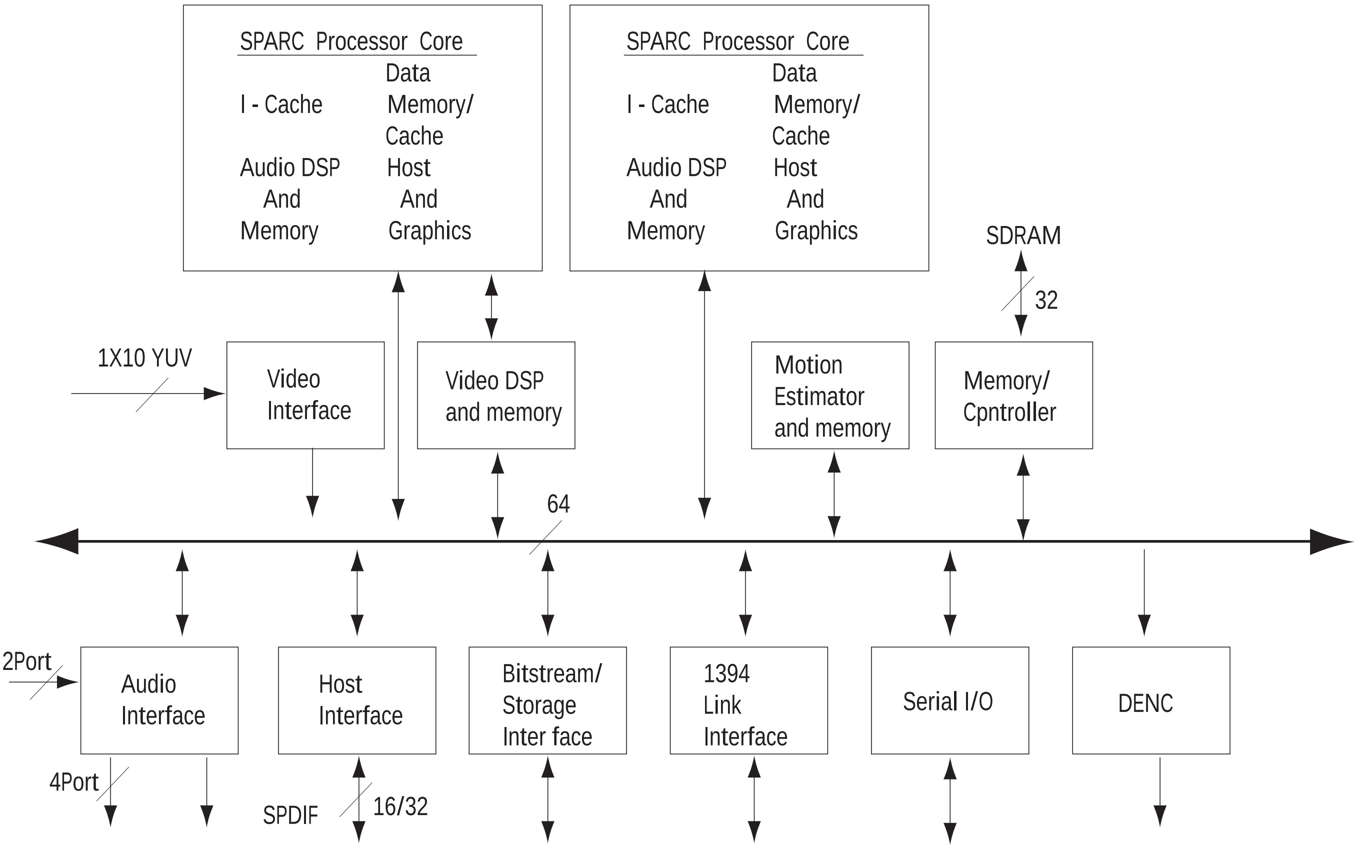

SPARC Processor Core
I - Cache
Data Memory/ Cache
Audio DSP And Memory
Host And Graphics
SPARC Processor Core
I - Cache
Data Memory/ Cache
Audio DSP And Memory
Host And Graphics
SDRAM
32
1X10 YUV
Video Interface
Video DSP and memory
Motion Estimator and memory
Memory/ Cpntroller
64
2Port
Audio Interface
Host Interface
Bitstream/ Storage Inter face
1394 Link Interface
Serial I/O
DENC
4Port
SPDIF
16/32

Fig. 7-6

7-2-2 A/V Processor (DIC1) Functional description

1) SPARC Processors
Two 32-bit SPARC processors, one dedicated to video processing and the other assigned general system tasks and audio processing, perform three classes of functions: system processing, audio processing, and high-level control flow and decision-making tasks for video processing. Optionally, they can also perform 2D graphics and host functions.
The DMN8602 also support multiple video inputs, windowed video ad graphics with arbitrarily relocatable and resizable windows, PIP (Picture-in-Picture), letterbox, and side-by-side display of SD sources.

2) Host Interface
The host communication functions include initializing the DMN-8602 device, downloading software to the local SDRAM, sending commands, monitoring status, and downloading graphics data such as OSD bitmap.

3) Bitstream / Storage interface

◆ ATAPI Controller

ATAPI is an asynchronous, 120ns, 16-bit word interface commonly used to connect devices such as hard disks, CD / DVD ROMs, and DVD RAMs. All operations are initiated by reading / writing a set of ATAPI device registers through programmed input / output(PIO) data transfer. ATAPI has DMA commands for transferring long data. The ATAPI register address is defined by the output pins CS0, CS1, DA[2:0].

◆ The IEEE1394 interface can receive MPEG-2 transport stream or DV stream data contained in isochronous packets (IPs). The DMN-8602 device filters the packets by matching channel IDs. In the case of MPEG-2 transport streams, the DMN-8602 device performs descrambling on the data that is scrambled with 5C encryption. Software is responsible for transport section processing and demultiplexing.

4) Video Interface

◆ Video Input channel

The video input channel captures ITU-R BT.656-compliant 10-bit digital YUV component video stream from Video decoder chip(TIC1)

◆ Video Digital Encoder (DENC)

The NTSC / PAL digital video encoder (DENC) module converts a digital video data stream into NTSC or PAL composite or component video output.

The DMN-8602 DENC output can be in one of the following formats:

- Baseband composite NTSC (M) or PAL (B,D,G,H,I) analog video.
- Separate analog luma(Y) and chroma(C) output to support S-Video.
- Separate analog component video RGB or SMPTE YPbPr output.

5) Audio Interface

The serial audio input port receives uncompressed 16- to 24-bit serial digital audio data from external audio ADC(AIC9). An internally generated clock provides bit serial clocking of the data coming from external ADC The serial audio output port sends uncompressed 16- to 24-bit serial digital audio data to external audio DAC(AIC1). An internally generated clock provides bit serial clocking of the data coming from external ADC

6) Serial I / O interface

◆ SPI interface

The SPI(Serial Peripheral Interface) port provides a bus for a serial interface with front panel micom(FIC1)

◆ IDC interface

The IDC bus is a simple, two-wire, bidirectional communication bus. The two signals, clock and data, are com mon to every device connected to the bus.

In this system, IDC bus is connected to EEPROM(DIC8) and Video Decoder(TIC1)

7-3 SERVO (DVP Multi Drive)

1) Pick-Up

Data in the disc is processed from the optical pick-up unit (OPU). OPU includes the Elantec chip (EL6912c) which is a highly integrated laser diode driver designed to support multi-standard writable optical drives. This chip also has an IV amplifier with concurrent read and write sampling. The architecture allows reprogramming of the timers to support different media DVD or CD standards, and different speed.

2) A-Chip

A chip is RF processor. This module performs RF signal processing which includes RFIP, RFIN, AGC, RF equalizer. This processor is able to detect tracking error, focus error and various signals such as CE, PE, SBAD, DEFECT, BCA, MIRROR, Wobble, TZC, RC, and RECD.

3) C-Chip

C-Chip is composed of DP1, PRML and WS.

First, the Data processor1 (DP1) performs EFM/EFM+ Demodulation and data is stored in the buffer memory in data processor2 (DP2). DVD data in this buffer is transferred to CSS/ATAPI through error-correction code

(ECC), descramble process and error detection code (EDC).

Second, WS performs the following processes.

①Delay compensation using Shift register

②Sample/Hold pulse generation

③I/V Gain Control

④Providing clock for RF chip

⑤OPC Control signal generation

Lastly, PRML completes the adaptive EQ/VD and Digital PLL.

4) D-Chip

D-Chip consists of Servo DSP, DP2 and 1Mbit memory. Servo DSP is dealing with controlling the servo-mechanism in DVD recorder. Servo-DSP has the following features.

①Bulit-in 10Bit ADC(8ch), DAC(3ch) and PWM(7ch)

②Step Motor Control Logic: Macro/Micro Step

③Track Counter: long distance velocity control direct seek

④Shock/Defect detection

⑤Header (DVD-RAM)/Land Pre-Pit (DVD-R/RW) Detection

⑥Several Servo Monitor Signal Detection

⑦RF IC Interface

⑧ Micom Interface

⑨Digital Servo Control of focus, tracking, sled and seek

⑩Disc Auto-Detection

⑪Automatic Adjustment of the offset, balance and gain of Focus and Tracking Signal

⑫Direct Seek with Velocity Control

⑬Step Motor Control: Macro Seek

⑭De-Track and Lens Shift Detection and Compensation

⑮Center Error Control

⑯DVD Layer Jump

⑰Tilt Detect and Compensation

DP2 performs High Speed ECC and CD DA Decoder.

5) ATAPI Controller

ATAPI (ATA Packet Interface) the standard interface protocol used to connect the CD / DVD Drive to IDE interface. Data from the front-end is processed to back-end through this ATAPI protocol. Sanyo chip (LC98600CT-XB0) is utilized for ATAPI interface. LC98600CT-XB0 has the following features.

①ECC and EDC correction / addition for CD-ROM data
②Subcode decoding / encoding
③Spindle servo control
④CLV / CAV servo control using ATIP data
⑤ATIP decoding and CRC check functions
⑥ Providing random EFM output for PCA use
⑦High-accuracy write strategy signal output enabled (CD-R 52x)
⑧Buffer RAM can be accessed by the microcontroller through the LC98600CT-XB0
⑨Built-in ATA-PI(IDE) interface (supports Ultra DMA modes 0,1, and 2)
⑩52x decoding speed / 52x encoding speed supported with 33.8688Mhz
⑪Maximum transfer speed PIO mode: 16.6 MB / s (with IORDY), Ultra-DMA: 66MB / s (with DMARQ)
⑫User can freely set the CD main channel, C2 flag, and subcode areas in buffer RAM
⑬Built-in batch transfer function for transferring (CD main channel, C2 flag, etc., in a single operation)
⑭Built-in multi-transfer function (allows multiple blocks to be sent to the host automatically in a single operation)

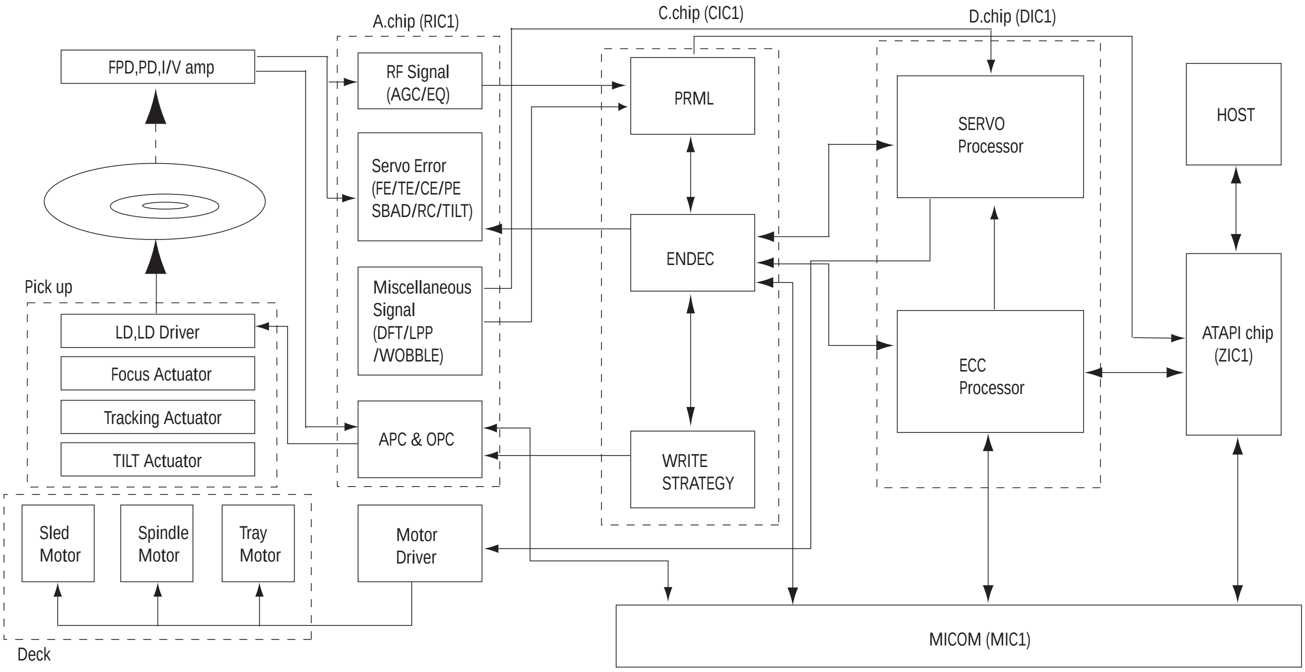

A.chip (RIC1)
C.chip (CIC1)
D.chip (DIC1)
FPD,PD,I/V amp
RF Signal (AGC/EQ)
Servo Error (FE/TE/CE/PE SBAD/RC/TILT)
Miscellaneous Signal (DFT/LPP /WOBBLE)
APC & OPC
Motor Driver
PRML
ENDEC
WRITE STRATEGY
SERVO Processor
ECC Processor
HOST
ATAPI chip (ZIC1)
Pick up
LD,LD Driver
Focus Actuator
Tracking Actuator
TILT Actuator
Sled Motor
Spindle Motor
Tray Motor
Deck
MICOM (MIC1)

Fig. 7-7

7-4 Video Input

7-4-1 Video Input Outline

DVD-R100 is the two Line Video input. Line 1 Video input is CVBS1 at the Rear Panel. Line 2 Video input is CVBS2 & S-Video2 at the Front Panel.
The analog Video signal select Line 1 or Line 2 by the IC601 (VCR Micom).
TIC1 (Video Decoder) diverges from the 14.318185MHz crystal, then generates ITU-R656 (10bits) and 27MHz clock.
TIC1 (Video Decoder) does closed caption, copy guard detect processing and A / D conversion of 11bit analog Video signal converted into Digital Video signal (ITU-R656 Format) is outputted via DIC1 (MPEG2 Decoder & Encoder with video Encoder) of digital part.

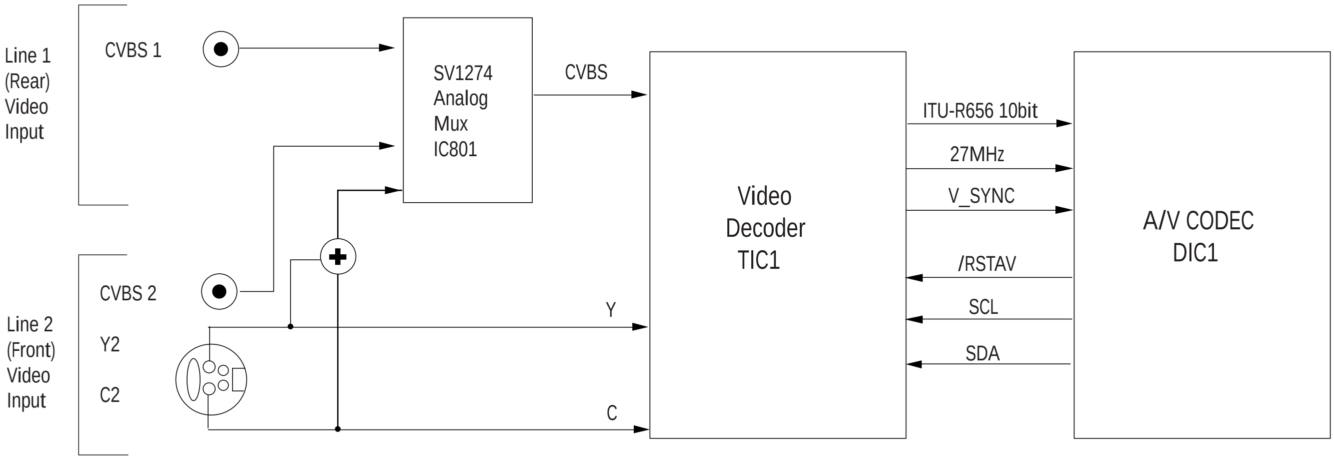

Line 1
(Rear)
Video
Input
CVBS 1
SV1274
Analog
Mux
IC801
CVBS
Video
Decoder
TIC1
ITU-R656 10bit
27MHz
V_SYNC
/RSTAV
SCL
SDA
A/V CODEC
DIC1
CVBS 2
Line 2
(Front)
Video
Input
Y2
C2
Y
C

Fig. 7-8

7-4-2 Analog Mux (SV1274)

IC801 is Analog Mux.
As Pin 64, 63 of the IC801 is controlled by the VCR Micom, IC801 select Line1 of CVBS[Pin4] and Line2 of CVBS[Pin 6] andTIC1 select Line2 of S-Video[Pin9. Pin18].
◆The analog Video Signal of IC801 output is selected by the FIC1 via TIC1(Video Decoder : TVP5146) of analog Video input parts.

7-4-3 NTSC/PAL Video Decoder (TVP5146 : Video Decoder)

The TIC1 (Video Decoder : TVP5146) device is a high quality, single-chip digital video decoder that digitizes and decodes all popular baseband analog video formats into digital component video. The TIC1 (Video Decoder : TVP5146) supports the analog-to-digital (A / D) conversion of component RGB and YPbPr signals, as well as the A / D conversion and decoding of NTSC, PAL and SECAM composite and S-video into component YCbCr.
This TIC1 (Video Decoder : TVP5146) includes four 10-bit 30-MSPS A / D converters. and A / D conversion of 10bit analog Video signal converted into Digital Video signal (ITU-R656 Format) is outputted via
DIC1 (MPEG2 Decoder & Encoder with video Encoder) of digital part.
The following output formats supply 10-bit 4:2:2 YCbCr to the DIC1 (MPEG2 Decoder & Encoder with video Encoder) of digital part.
On CVBS and S-video inputs, the user can control video characteristics such as contrast, Brightness, saturation, and hue via an I2C DIC1 port [PIN V17, V18] interface.
The TVP5146 decoder includes methods for advanced vertical blanking interval (VBI) data retrieval. The VBI data processor (VDP) slices, parses, and performs error checking on teletext, closed caption (CC), Copy Guard Detect Processing and other VBI data.

7-5 Video Output

7-5-1 Outline

DIC1 (MPEG2 Decoder & Encoder with video Encoder) diverges from the 13.5MHz crystal, then generates VSYNC and HSYNC.
DIC1 (MPEG2 Decoder & Encoder with video Encoder) does RGB encoding, copy guard processing and D/A conversion of 10bit Video signal converted into analog signal is outputted via amplifer of analog part.

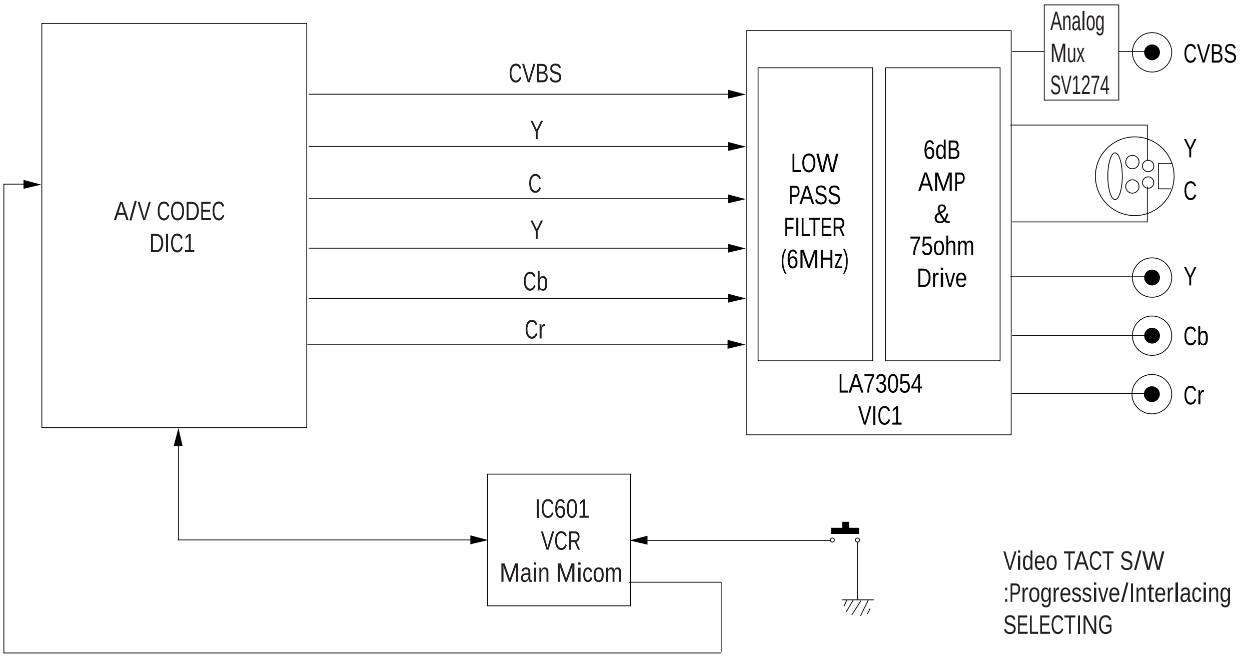

A/V CODEC
DIC1
CVBS
Y
C
Y
Cb
Cr
LOW PASS FILTER (6MHz)
6dB AMP & 75ohm Drive
LA73054
VIC1
Analog Mux SV1274
CVBS
Y
C
Y
Cb
Cr
IC601
VCR
Main Micom
Video TACT S/W
:Progressive/Interlacing
SELECTING

Fig. 7-9

7-5-2 NTSC/PAL Digital

DIC1 inputted from pin E1 with 13.5MHz generates HSYNC and VSYNC which are based on video signal. DIC1 is synchronous signals with decoded video signal.
The above signals, which are CVBS (Composite Video Burst Synchronized), Y(S_Video), C(S_Video), Y(Component)/G(Green), Cr(component)/R(Red), Cb(component)/B(Blue), are selectively outputted 480i (interlaced Video Output), 480P(progressive Video Output) by the Front switch.
DIC1 adopts 10bit D/A converter.
DIC1 perform video en-coding as well as copy protection.

7-5-3 Amplifier (VIC1: LA73054)

VIC1 is 6dB amplifier.
Based on CVBS signal, the final output level must be 2Vpp without 75ohm terminal resitance.
Because the level of video encoder output is only 1.1Vpp, the level is adjusted with the special amplifier.
When mute of pin 5 is high active, if the pin is floating and connecte to power, the output signal is never ouputted.
CVBS, Y, C, R, Pb(B), Pr(R) outputted from video encoder are inputted to VIC1 (Pin 2, 8, 6, 16, 14).
The signal to which gain is adjusted by amplifier is outputted from jack via 75ohm Resistance (VR11~VR16).

7-6 Audio

7-6-1 Input Block

DVD-VR300 has two stereo line input terminals. and internal TV-audio from RF Tuner Block. These three Analog audio signal source are converted to digital data by Input Block.
Input Block has a Multiplexer (IC801), Input Filter (AIC81, AIC82), and A/D converter (AIC9).
IC203 change it's output by selection control signal from FIC1 (Front Micom).
The output signal of IC801 are filtered by OP-Amp (AIC81, AIC82).
AIC81 (L-ch) have two op-amp in each.

7-6-2 Output Block

DVD-VR300 has two stereo analog line out terminal, and two digital output terminal.
Decoded signal by DIC1 is inputted to AIC1 (D/A Converter), then filtered and amplified by AIC4 (OP-Amp).
And the digital audio signal (IEC-958) is drived by AIC3 inverter and ouputted in Optical/Coaxial (S/PDIF) terminal.

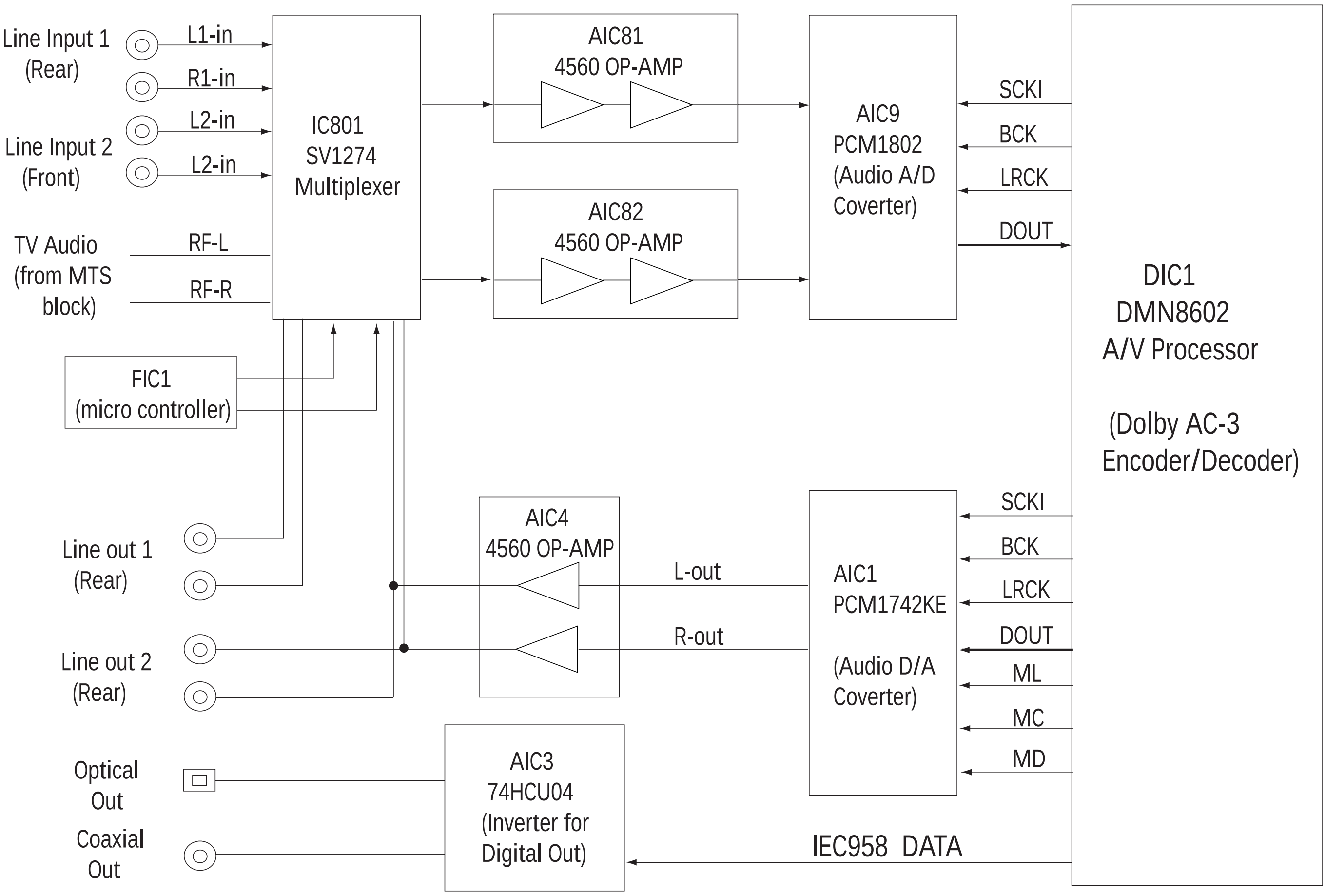

Line Input 1
(Rear)
L1-in
R1-in
L2-in
L2-in
Line Input 2
(Front)
TV Audio
(from MTS
block)
RF-L
RF-R
IC801
SV1274
Multiplexer
FIC1
(micro controller)
AIC81
4560 OP-AMP
AIC82
4560 OP-AMP
AIC9
PCM1802
(Audio A/D
Coverter)
SCKI
BCK
LRCK
DOUT
DIC1
DMN8602
A/V Processor
(Dolby AC-3
Encoder/Decoder)
Line out 1
(Rear)
Line out 2
(Rear)
AIC4
4560 OP-AMP
L-out
R-out
AIC1
PCM1742KE
(Audio D/A
Coverter)
SCKI
BCK
LRCK
DOUT
ML
MC
MD
Optical
Out
Coaxial
Out
AIC3
74HCU04
(Inverter for
Digital Out)
IEC958 DATA

Fig. 7-10

7-7 VCR System Control

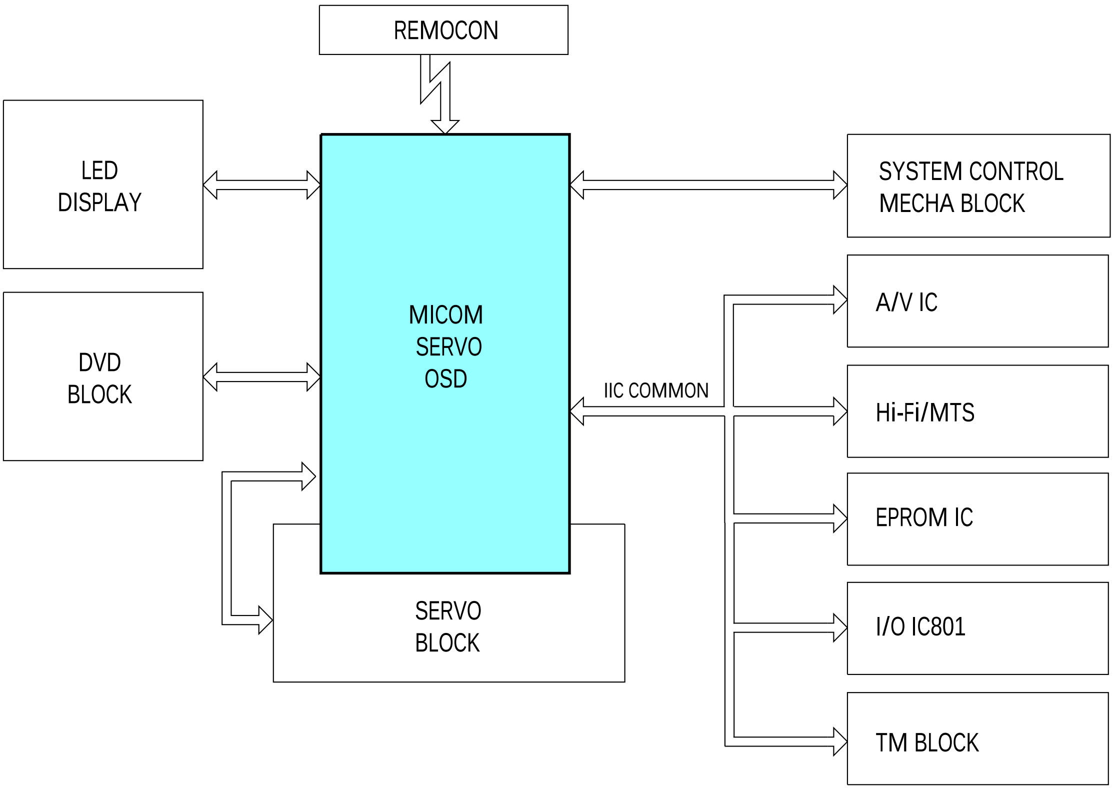

REMOCON
LED DISPLAY
DVD BLOCK
MICOM
SERVO
OSD
SERVO BLOCK
IIC COMMON
SYSTEM CONTROL MECHA BLOCK
A/V IC
Hi-Fi/MTS
EPROM IC
I/O IC801
TM BLOCK

Fig. 7-11 Micom Block Diagram

(1) Outline

The system control circuit inputs the commands given by the operator to set the mechanism and circuit to the commanded mode. The circuit also inputs the detected output from the tape and mechanism protection sensor and protects the VCR and tape against abnormal operation.

Fig. 7-11 is a simplified system control block diagram.

The system control is performed by 4 control sections. (System and timer control, Servo control, F/S Tuner, On Screen Display).

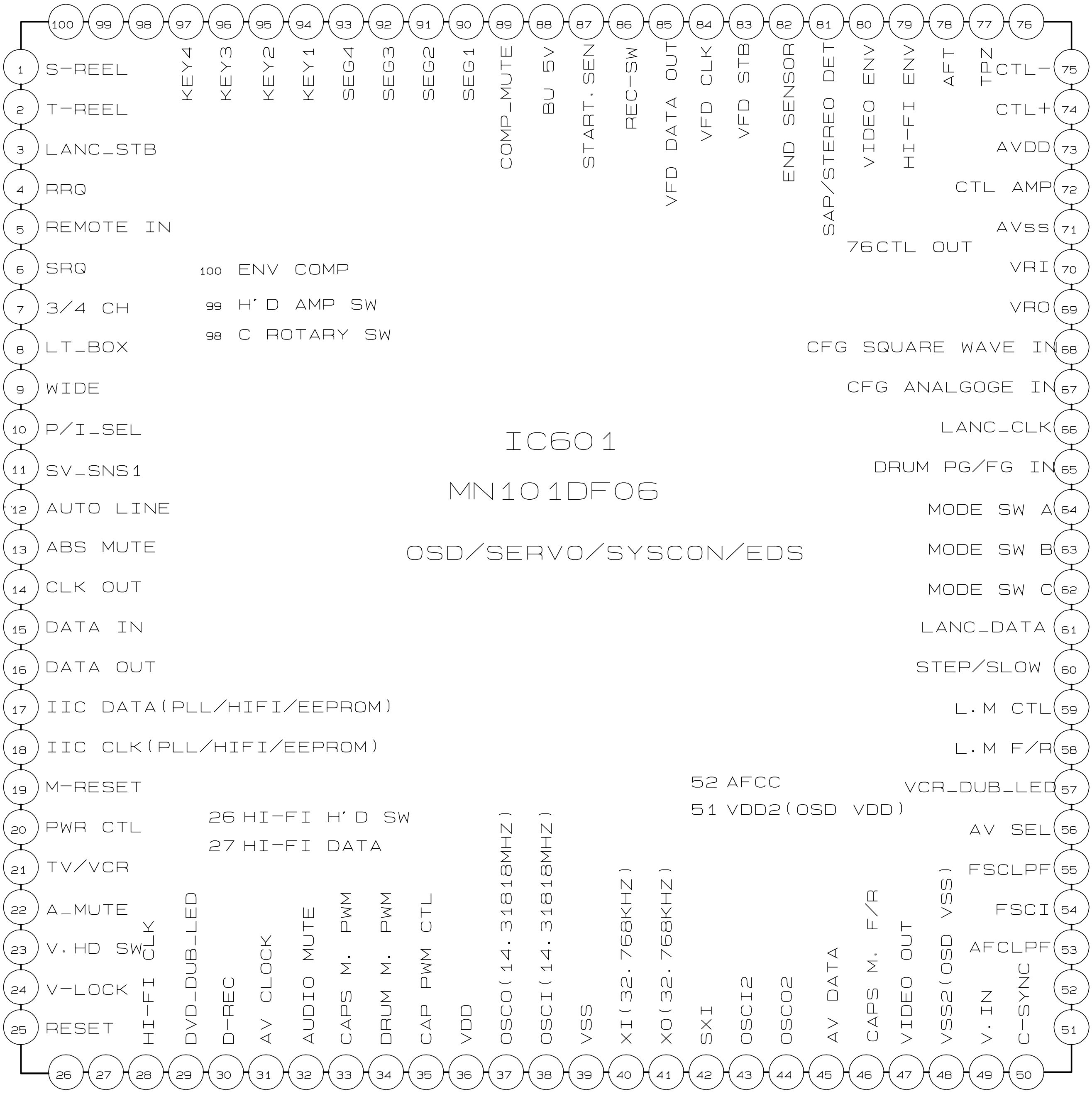

IC601
MN101DF06
OSD/SERVO/SYSCON/EDS
1 S-REEL
2 T-REEL
3 LANC_STB
4 RRQ
5 REMOTE IN
6 SRQ
7 3/4 CH
8 LT_BOX
9 WIDE
10 P/I_SEL
11 SV_SNS1
12 AUTO LINE
13 ABS MUTE
14 CLK OUT
15 DATA IN
16 DATA OUT
17 IIC DATA(PLL/HIFI/EEPROM)
18 IIC CLK(PLL/HIFI/EEPROM)
19 M-RESET
20 PWR CTL
21 TV/VCR
22 A_MUTE
23 V.HD SW
24 V-LOCK
25 RESET
26 HI-FI H'D SW
27 HI-FI DATA
28 HI-FI CLK
29 DVD_DUB_LED
30 D-REC
31 AV CLOCK
32 AUDIO MUTE
33 CAPS M. PWM
34 DRUM M. PWM
35 CAP PWM CTL
36 VDD
37 OSCO(14.31818MHZ)
38 OSCI(14.31818MHZ)
39 VSS
40 XI(32.768KHZ)
41 XO(32.768KHZ)
42 SXI
43 OSCI2
44 OSCO2
45 AV DATA
46 CAPS M. F/R
47 VIDEO OUT
48 VSS2(OSD VSS)
49 V.IN
50 C-SYNC
51 VDD2(OSD VDD)
52 AFCC
53 AFCLPF
54 FSCI
55 FSCLPF
56 AV SEL
57 VCR_DUB_LED
58 L.M F/R
59 L.M CTL
60 STEP/SLOW
61 LANC_DATA
62 MODE SW C
63 MODE SW B
64 MODE SW A
65 DRUM PG/FG IN
66 LANC_CLK
67 CFG ANALGOGE IN
68 CFG SQUARE WAVE IN
69 VRO
70 VRI
71 AVss
72 CTL AMP
73 AVDD
74 CTL+
75 CTL-
76 CTL OUT
77 TPZ
78 AFT
79 HI-FI ENV
80 VIDEO ENV
81 SAP/STEREO DET
82 END SENSOR
83 VFD STB
84 VFD CLK
85 VFD DATA OUT
86 REC-SW
87 START.SEN
88 BU 5V
89 COMP_MUTE
90 SEG1
91 SEG2
92 SEG3
93 SEG4
94 KEY1
95 KEY2
96 KEY3
97 KEY4
98 C ROTARY SW
99 H'D AMP SW
100 ENV COMP

Fig. 7-12 IC601 Block Diagram

(2) Mechanism/Circuit Control

When the u-COM inputs operator's commands via the key input or remote input, the mechanism and circuits are set to the command mode. This function controls mechanism / servo section and audio / video processing section.

1) Cassette Loading Control

Controls loading and ejection of a cassette and determines the mechanism operation mode; tape loading / unloading, action / release of various breaks, tension, take up mechanism etc.

2) Tape Protection Sensor Monitoring

Detects abnormal operation in tape using the supply and take up end sensor, reel sensor and SW 30Hz pulse for drum rotation.

3) Capstan Motor Control

Determines the tape speed and direction, fast forwards and rewinds the tape etc.

4) Tape Counter Control

Counts the control pulses on the control track, picked up by the control head and shows it on the digital multidisplay.

5) Servo Control

Determines the operation mode of the servo circuit. Control the speed of drum and capstan motor, and then Control the phase of drum and capstan motor.

6) Record Safety Tap Detection

Detects the safety tab on the rear of a cassette to prevent a prerecorded program from being erased.

7) Loading/Unloading control

Controls a series of loading / unloading operation after the u-COM judges the operation mode and sets the mechanism to suitable mode. Fig. 7-13 show correlation between u-COM and peripheral components during the loading / unloading operation.

The mechanism state switch (PROG. SW) detects the mechanism position. When the driving gear is turned by the loading motor, the switch driving slider traces the groove, and this switch stops at the correct position corresponding to each mode. In other words, the u-COM judges the present mechanism state from the PROG SW after receiving the mode data, then it outputs the loading motor and capstan motor control signals.

This continues until the PROG SW reaches the correct state by the u-COM.

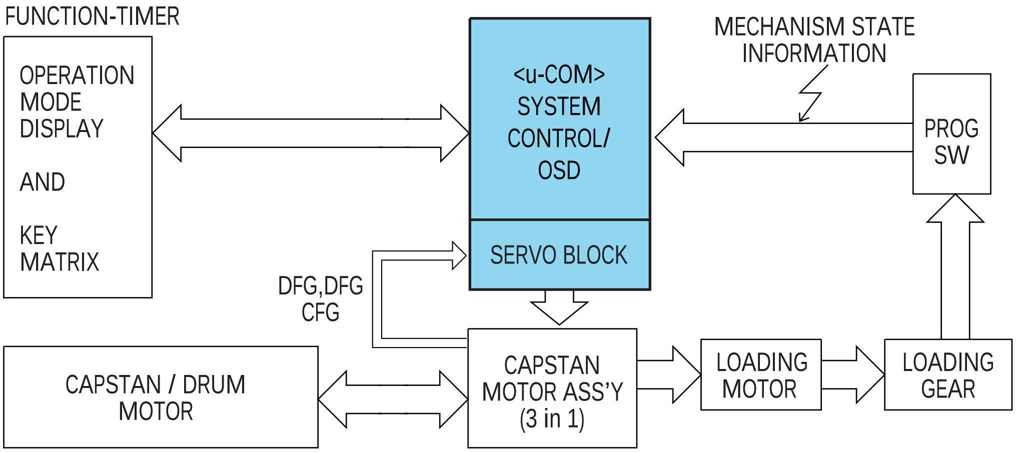


Fig. 7-13 The Relationship Between u-COM, Capstan, Cylinder and Loading Motor

(3) Program SW Input

The mechanism state for each mode is shown in table 1 below. The mechanism state is classified into position, and correlation between the switch position and mechanism state is shown in table 1, also.

Table 1 : Prog. SW State in Each Mode

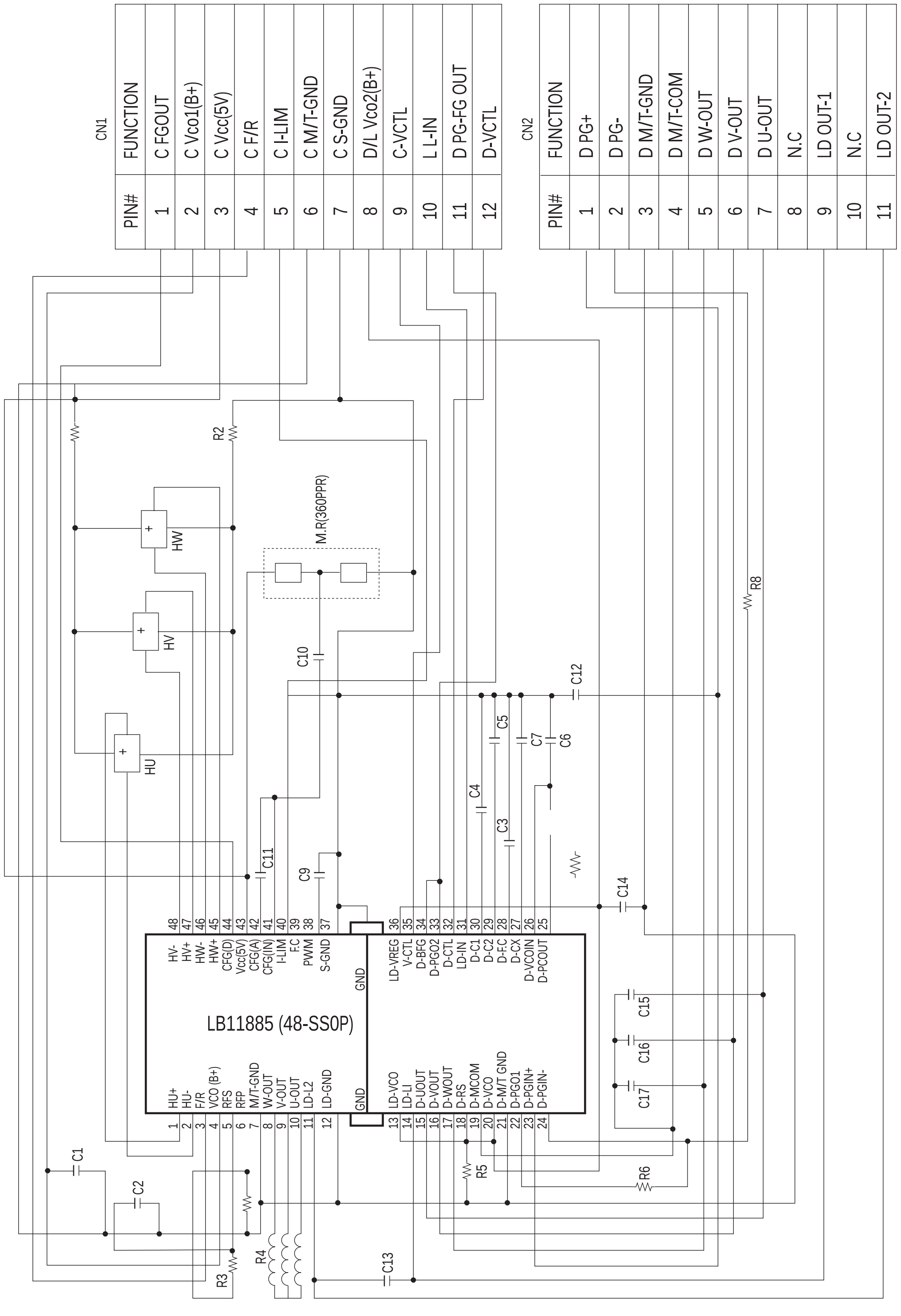
POSION	CAM S/W			START	ACTION MODE
	A	B	C	SEN	
STANBY	0	0	0	0	Eject
POWER OFF	0	0	0	1	Unload POWER OFF
LOADING START	0	0	0	1	(Tape loading start point)
LOADING END	1	0 1	1	1	(Tape loading end point)
REV	1	1	0	X	Reverse picture search, reverse SLOW
PLAY	0	1	0	X	Play, Rec, F-PS, Still, SLOW, F-ADV
STOP 1	0	0	1	1	Stop (Play position 5 Min. over)
STOP 2	0	0	1	X	(MAIN Break ON MODE)
FF/REW 1	1	0	0	X	High speed Rew, Low speed FF
FF/REW 2	0	1	1	X	High speed FF, Low speed Rew

(4) Motor Control

In case of Scorpio-2 Deck, Loading Motor Drive IC lies in Capstan Motor, not like Scorpio-1 Deck.
In detail, Capstan Motor Drive IC is designed to drive Loading Motor + Capstan Motor + Cylinder Motor in one IC. (See Fig. 7-14)

Table 2 : Motor Control Logic

CN604-PIN10	MOTOR
0 ~ 1V	**Reverse**
2 ~ 3V	**Stop**
4 ~ 5V	**Forward**


LB11885 (48-SS0P)
HV- 48
HV+ 47
HW- 46
HW+ 45
CFG(D) 44
Vcc(5V) 43
CFG(A) 42
CFG(IN) 41
I-LIM 40
F.C 39
PWM 38
S-GND 37
GND
LD-VREG 36
V-CTL 35
D-BFG 34
D-PGO2 33
D-CTL 32
LD-IN 31
D-C1 30
D-C2 29
D-F.C 28
D-CX 27
D-VCOIN 26
D-PCOUT 25
HU+ 1
HU- 2
F/R 3
VCO (B+) 4
RFS 5
RFP 6
M/T-GND 7
W-OUT 8
V-OUT 9
U-OUT 10
LD-L2 11
LD-GND 12
GND
LD-VCO 13
LD-LI 14
D-UOUT 15
D-VOUT 16
D-WOUT 17
D-RS 18
D-MCOM 19
D-VCO 20
D-M/T GND 21
D-PGO1 22
D-PGIN+ 23
D-PGIN- 24
HU
HV
HW
M.R(360PPR)
R2
R3
R4
R5
R6
R8
C1
C2
C3
C4
C5
C6
C7
C9
C10
C11
C12
C13
C14
C15
C16
C17
CN1
CN2

CN1

PIN#	FUNCTION
1	C FGOUT
2	C Vco1(B+)
3	C Vcc(5V)
4	C F/R
5	C I-LIM
6	C M/T-GND
7	C S-GND
8	D/L Vco2(B+)
9	C-VCTL
10	L L-IN
11	D PG-FG OUT
12	D-VCTL

CN2

PIN#	FUNCTION
1	D PG+
2	D PG-
3	D M/T-GND
4	D M/T-COM
5	D W-OUT
6	D V-OUT
7	D U-OUT
8	N.C
9	LD OUT-1
10	N.C
11	LD OUT-2

Fig. 7-14 Loading Motor + Capstan Motor + Cylinder Motor Block Diagram

(5) Stop Mode

The VCR enters the stop mode when the stop button is pressed during playback, record, rewind and fast forward mode. When trouble is detected, the VCR enters the stop mode to protect the tape and mechanism or when the tape reaches the end, etc.

- State Input ;
  Power switch on position.
  Stop button operation in all mode, except for timer recording and XPR.

(6) Play Mode

- State input ; Play button operated in stop, fast forward, rewind, forward search, reverse search, still mode, etc.,
- Indication output ;
  "PLAY" lights in LED Module.
- Output at ;
  IC601 Pin 46 (CAP F/R) : H

(7) Trick Play Mode

Trick play modes are classified into forward search, reverse search, still, slow and frame advance.
Audio signal is muted by pin 32 of IC601 (A.MUTE). V-lock is controlled by pin 24 of IC601.

(8) Forward Search Mode

7 Times play speed search in SP and SLP, 21 times play speed search in SLP.

- State input ; Press the fast forward button on the VCR front panel or the remote control in play or still mode.
- Indication output ; "FPS " display in LED Module during 3 seconds.
- Output at ;
  IC601 Pin 46 (CAP F/R) : H
  IC601 Pin 32 (A.MUTE) : H

(9) Reverse Search Mode

7 times play speed reverse search in SP, 21 times play speed reverse search in SLP.

- State input ;
  Press the rewind button on the VCR front panel or on the remote control in play or still mode.
- Indication output ;
  "RPS" display in LED Module during 3 seconds.
- Output ;
  IC601 Pin 46 (CAP F/R) : L
  IC601 Pin 32 (A.MUTE) : H

(10) Slow Mode

- State input ; Press "▶II " button and then press "▶▶" button on the remote control.
  The slow speed can be changed when "▶▶" or "◀◀" button is pressed.
- Indication output ; "SLOW" lights in LED Module.
- Output at ;
  IC601 Pin 46 (CAP F/R) : H
  IC601 Pin 32 (A.MUTE) : H

(11) Play/Still Mode

The same track is traced by the video heads.

- State input ; Press “▶II “ button in play modes.
- Indication output ; “STILL” display in LED Module.
- Output at ;
  IC601 Pin 46 (CAP F/R) : H
  IC601 Pin 32 (A.MUTE) : H

(12) Record Mode

Must use a cassette with the safety tab.

Index signal is recorded on the control track of the tape at the start of recording.

- State input ;
  Press the record button during stop mode and record pause mode or at the preset time reached in the timer record mode. Press the REC button in stop mode.
- Indication output ;
  “REC” lights in LED Module in normal record mode, “0:30, 1:00, 1:30, 2:00, 3;00 or 4:00” display in timer XPR modes.
- Output at ;
  IC601 Pin 46 (CAP F/R) : H

(13) Record Pause Mode

The pinch roller is released from the capstan shaft in a moment.

The brake is applied to the take up reel to prevent tape slack during the record pause mode.

- State input ; Press “II “ button in the record mode.

Note : Inoperative during recording and XPR mode.

- Indication output ; “PAUSE”display in LED Module.

(14) Fast Forward Mode

Tape fast forward operation using capstan motor.

- State input ; Press the rewind button in the stop or fast forward modes.
- Indication output ; “FF” lights in LED Module.
- Output at ;
  IC601 Pin 46 (CAP F/R) : H

(15) Rewind Mode

Tape rewind operation using the capstan motor.

- State input ; Press the rewind button in the stop or fast forward modes.
- Indication output ; “REW” lights in LED Module.
- Output at ;
  IC601 Pin 46 (CAP F/R) : L

(16) Rewind Shut-Off Mode

Tape rewind operation then power off mode.

- State input ; Press the power button in the rewind mode.

(17) Trouble Detection

The trouble detection circuits are provided to protect the from damage (Fig. 7-15). The reel lock sensor detects incorrect rotation of supply and take up reel. The reel lock sensor consists of the disk and photo sensor installed at the bottom of the reel disk. the disk has 6 or 8 shielder parts and the photo sensor consists of the LED and photo transistor assembly. When the light is shielded by the the shielder or enters the photo transistor, the output is obtained from the photo sensor. IC601 measures the period of the pulse. When it is 4 seconds or more during record / play, the VCR enters the reel emergency mode.
The VCR maintains the unload-power-on state in the reel emergency.

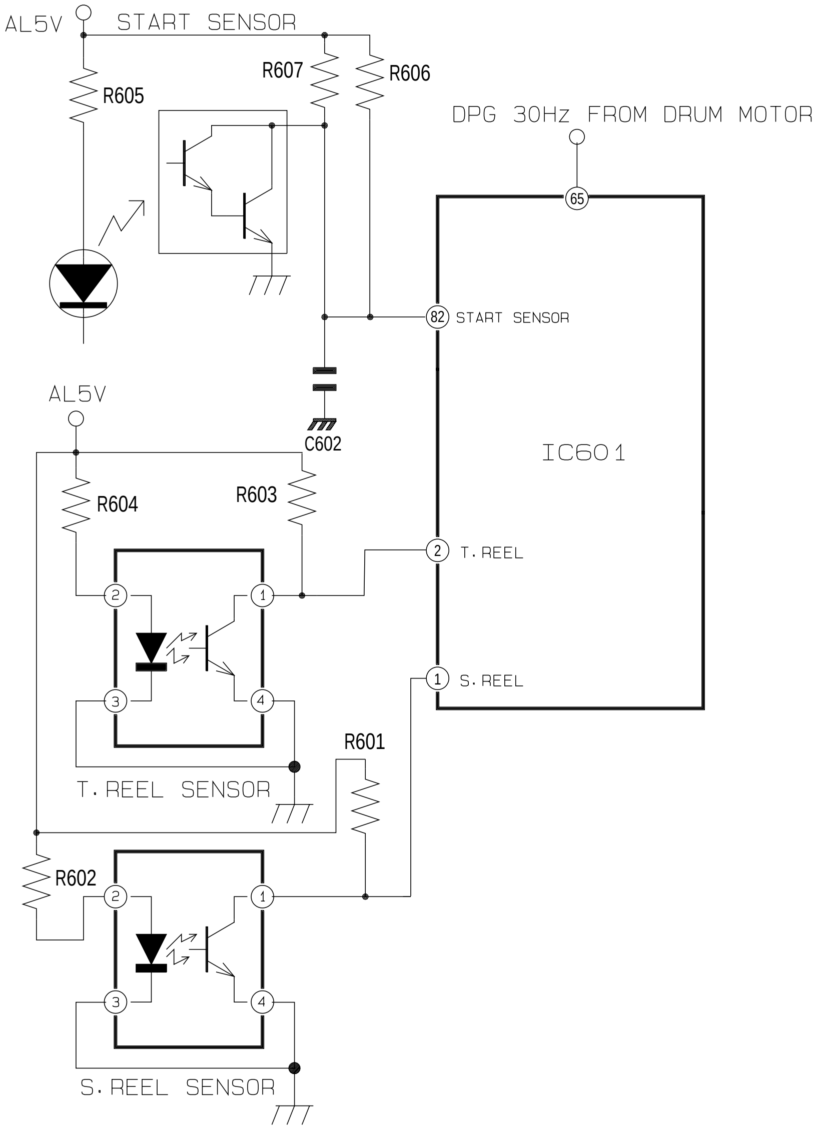

AL5V
START SENSOR
R605
R607
R606
DPG 30Hz FROM DRUM MOTOR
65
82
START SENSOR
C602
AL5V
IC601
R604
R603
2
T.REEL
1
S.REEL
2
1
3
4
T.REEL SENSOR
R601
R602
2
1
3
4
S.REEL SENSOR

Fig. 7-15 Reel and Cylinder Lock T.END/S.END Sensor

(18) Cylinder Lock Sensor

If the frequency of D-FG is less than 230Hz or more than 430Hz during 500msec, and such stuation occurs 3 times contined, micom makes the VCR drum emergency.

(19) Tape End Sensor

When end sensor detects the transparent section at the end of tape, the VCR enters auto rewind mode, except during timer recording and OTR mode. The cassette LED emits light through the transparent section of tape to the photo transistors, which are installed at both ends of the cassette. When start sensor detects the start section of the tape during reverse search and rewind, the VCR automatically goes to stop mode.

(20) Tape Counter Control

Fig. 7-16 is a simplified diagram of the tape counter control circuit. The tape counter in the u-COM counts the control pulses derived from control head. The control signal on the control track of the tape is picked up by the control head and supplied to pins 74, 75 of IC601. The control pulse is amplified by the u-COM IC. The u-COM determines the tape direction so the counter counts up when the “CAP F/R”signal is Hi and the counter counts down when the “CAP F/R” signal is Low. By counting the control pulse, the counter data is supplied to the VF display. Counter displays the time and it is increased or decreased by one minute after counting 1800 control pulses. Counter mode is switched to clock mode when the display button is pushed or when the VCR goes to power off mode. When the Clear button is pressed, the counter is reset to “00 : 00”.
The tape counter has a memory stop function.

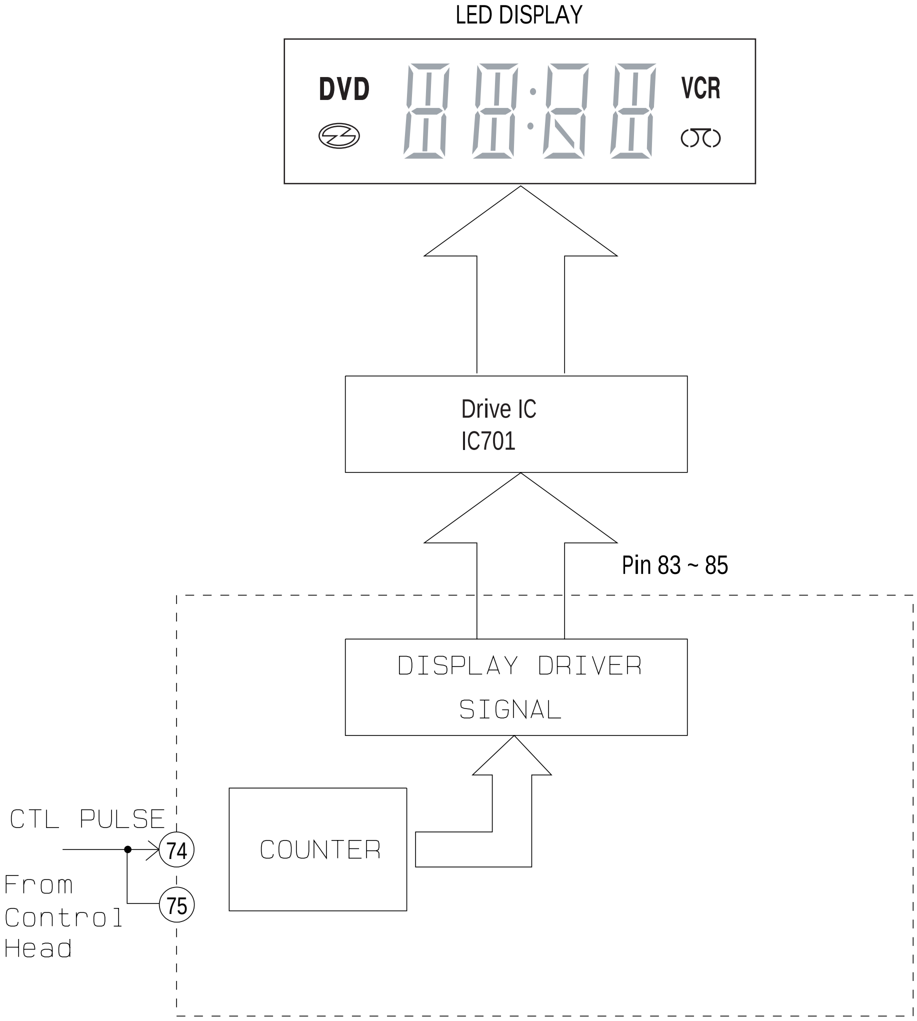

LED DISPLAY
DVD
VCR
Drive IC
IC701
Pin 83 ~ 85
DISPLAY DRIVER
SIGNAL
COUNTER
CTL PULSE
74
75
From
Control
Head

Fig. 7-16 Counter Display

(21) Timer/OTR Control

The timer can preset 12 programs in one month including daily and weekly programs.
Express recording lets the operator record up to 4 hours without programming the timer.

(22) Clock Display

The clock generator inside of the u-COM counts the oscillation signal of XT601 for the timer clock data.

(23) Power Failure Detection

u-COM goes to the power failure mode when the 88 port is lower than 4/5 of AD Vcc level.

(24) 4H'D Control

During trick play (still,slow,F-advance), it is necessary to control pre-amp,video circuit. the micom control pin 98 (C-ROTARY), pin 99 (HD-AMP) of the IC601 during PB period in Slow mode.
These port is applied to video IC to operate the trick play.

7-8 VCR Servo

(1) Outline

The servo system is divided into three loops. The cylinder servo controls the rotation of video heads, the capstan servo controls the tape speed, and the tension. In addition it's necessary to control cylinder motor, especially during trick play in 4H'D models. The tension servo maintains the tape tension constant: it keeps the compression strength of tape against the video heads at the optimum level so that a stable RF signal is produced during recording and playback. The tension servo operation is entirely mechanical. The cylinder servo loop controls the phase and speed of the cylinder motor. The speed is kept at a constant 1800 RPM and the
phase determines the mechanical position relative to the vertical Sync signal. The capstan servo loop controls the phase and speed of the capstan motor so that the video head can trace the video track correctly. It keeps tape speed constant according to the mode (SP, SLP)during playback and recording.

Table 3 : Servo System Signal

MOTOR	SYSTEM	MODE	REFERENCE SIGNAL	COMPARISON SIGNAL
CYLINDER (VIDEO HEAD) (4H' D)	PHASE	REC	V-SYNC	SW 30Hz
		PB	REF30Hz	
	SPEED	COMMON	8MHz	CYLINDER FG(720Hz)
	SPEED& PHASE	TRICK PLAY (STILL. SLOW)	MICOM CONTROL CYLINDER SPEED TO MATCH H-SYNC SPEED	
CAPSTAN (4H' D)	PHASE	REC	DIVIDED CFG PULSE	REF 30Hz
		PB	CTL 30Hz	
	SPEED	COMMON	8MHz	CAPSTAN FG
	SPEED& PHASE	TRICK PLAY (STILL. SLOW)	MICOM CONTROL CAPSTAN DRIVE SIGNAL WITH CAP C.L	

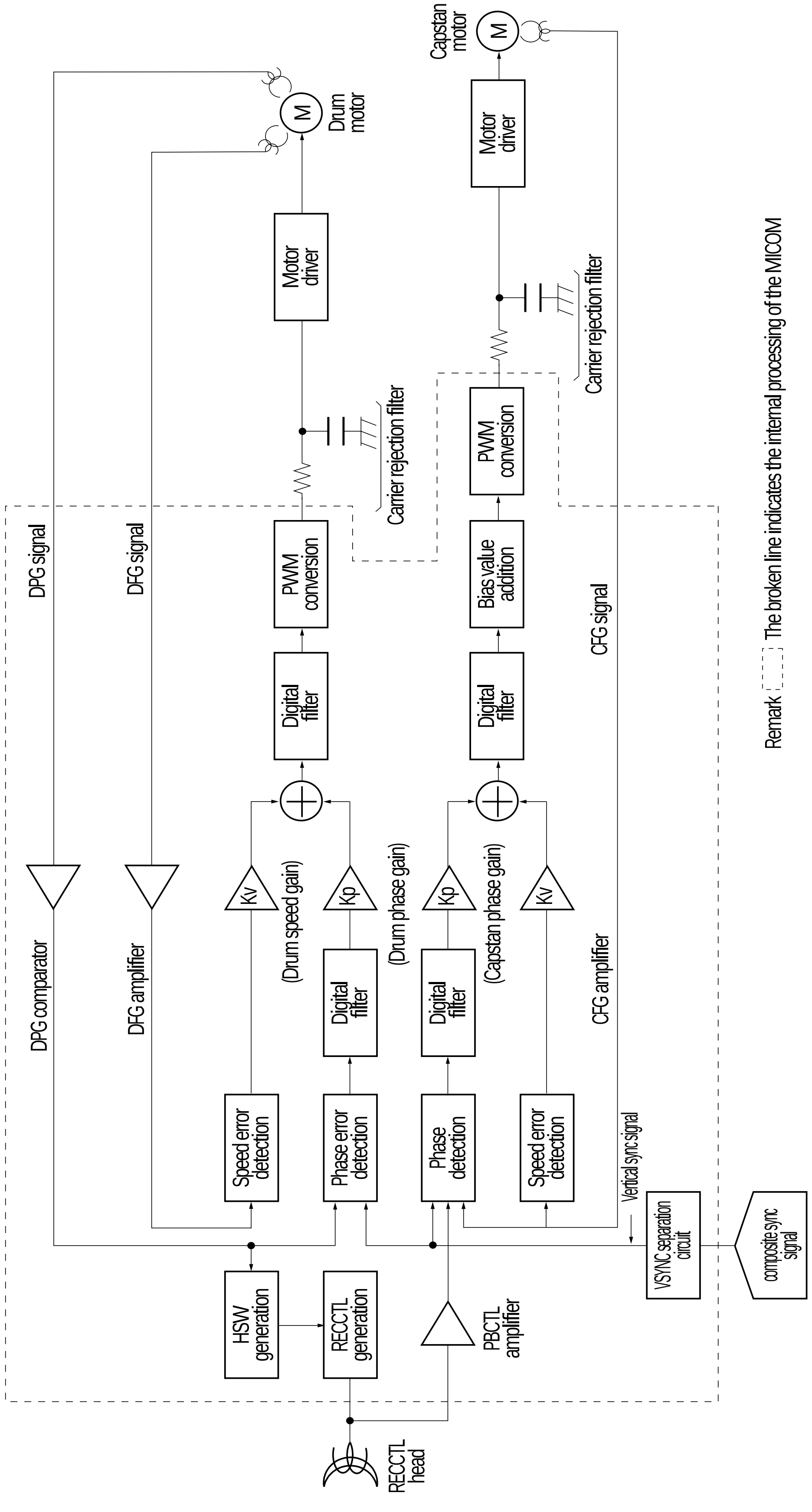

DPG signal
DFG signal
Drum motor
M
Motor driver
Carrier rejection filter
PWM conversion
Digital filter
Kv
Kp
(Drum speed gain)
(Drum phase gain)
DPG comparator
DFG amplifier
Speed error detection
Phase error detection
Digital filter
HSW generation
RECCTL generation
RECCTL head
PBCTL amplifier
Phase detection
Digital filter
Kp
(Capstan phase gain)
Kv
Speed error detection
CFG amplifier
CFG signal
Bias value addition
Digital filter
PWM conversion
Carrier rejection filter
Motor driver
Capstan motor
M
Vertical sync signal
VSYNC separation circuit
composite sync signal
Remark
The broken line indicates the internal processing of the MICOM

Fig. 7-17 Block Diagram

(2) Capstain Speed Error Detector

The capstan speed control operates so as to hold the capstan at a constant rotational speed, by measuring the period of the CFG signal. A digital counter detects the speed deviation from a preset value. The speed error data is added to phase error data in a digital filter. this filter controls a pulse-width modulate (PWM) output, which controls the rotational speed and phase the captain.
When the error is zero, the PWM circuit outputs a waveform with a 50% duty cycle.

The CFG input signal from the capstan motor is a square wave the CFG input signal is compared by a comparator and than sent to speed error detector as the CFG signal.

The speed error detector uses the system clock to measure the period of the CFG signal, and detects the deviation from a preset data value. The preset data is the value that would result from measuring the CFG signal period with the clock signal if the capstan motor were running at the correct speed.

The error detector operates by latching a counter value when it detects an edge of the CFG signal.
the latched counter provides 16 bits of speed error data for the digital filter to operate on.
The digital filter adds the speed error data to phase error data from the capstan phase control system,then sends the result to the pulse-width modulator as capstan error data.

(3) Capstain Phase Error Detector

The capstan phase error detector consists of a 16-bit counter, a capstan phase preset data register pair, a latch signal circuit driven by a feedback signal, and a captain phase error data register pair.

The capstan phase control in rec mode is executed by comparing HD S/W, which is synchronized with V-sync, with devided CFG signal. And than it does in playback mode by comparing HD S/W, which is synchronized with DFG and DPG, with PB CTL signal.

The latch signal for the phase error data in record mode is the devied CFG signal, which is devided from the CFG signal in the CFG frequency devider to a frequency of 30HZ.
In playback, the latch signal is the devied CFG signal obtained by frequency division from the rising edge of PB-CTL signal (playback control pulse signal).

The error data is a signed binary value centered on a phase error of zero (corresponding to the correct rotational phase). If the phase legs the correct phase ,the error is positive (+).
If the phase leads the correct phase, the error is negative (-).

(4) Drum Speed Error Detector

Drum speed control operates so as to hold the drum at a constant rotational speed, by measuring the period of the DFG signal. A digital counter detects the speed deviation from a preset value. The speed error data is added to phase error data in a digital filter. The filter controls a pulsewidth modulated (PWM) output,which controls the rotational speed and phase of the drum.

The DFG input signal from the drum motor is a square wave. The DFG input signal is compared by a comparator and than sent to the speed error detector as the DFG signal.

The speed error detector uses the system clock to measure the period of the DFG signal, and detects the deviation from a preset data value. The preset data is the value that would result from measuring the DFG signal period with the clock signal if the drum motor were running at the correct speed.

The error detector operates by latching a counter value when it detects an edge of the DFG signal. The latched count provides 16 bits of speed error data for the digital to operate on.
The digital filter adds the speed error data to phase error data from the drum phase control system, then sends the result to the pulse-width modulator as drum error data.

(5) Drum Phase Error Detector

Drum phase control must start operating after the drum motor is brought to the correct rotational speed by the speed control system . Drum speed control works as follows in record and playback.

- Record : Phase is controlled so that the vertical blanking intervals of the recorded video signal will line up along the edge of the tape.

- Playback : Phase is controlled so as to trace the recorded tracks accurately.

A digital counter detects the phase deviation from a preset value. The phase error data is added to speed error data in a digital filter. this filter controls a pulse-width modulated (PWM) output, which controls the rotation phase and speed of the drum.When the error is zero, the PWM circuit outputs a waveform with a 50% duty cycle.

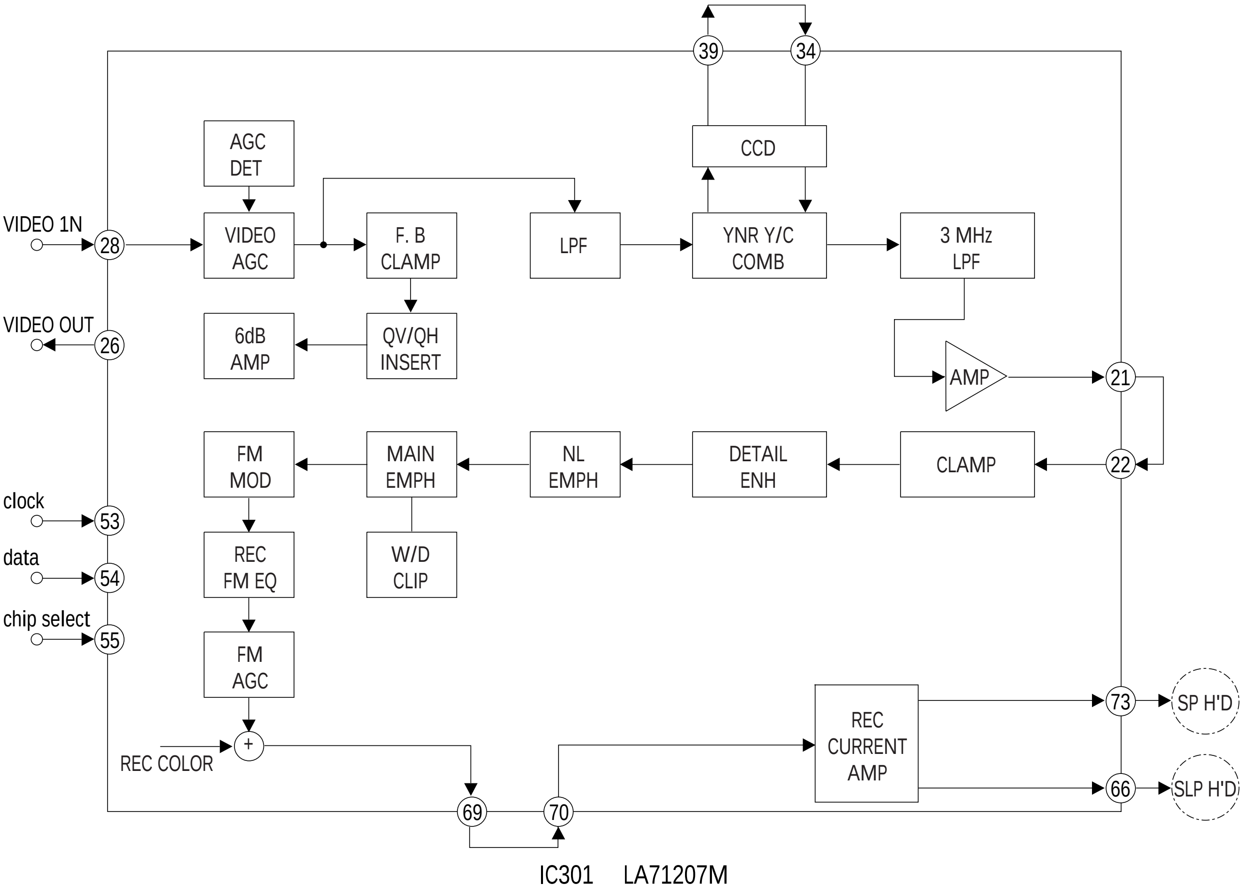
The phase counter error detector compares the phase of the DPG pulse (tach pulse),which contains video head phase information, with a reference signal. In the actual circuit , the comparison is carried out by comparing the head-switching (HSW) signal,which is delayed by a counter that is reseted by DPG, with a reference signal. The reference signal is the REF 30Hz signal,which differs between record and playback as follows.

- Record : V sync signal extracted from the video signal to be recorded (frame rate signal, actually 1/2V sync).

- Playback : 30Hz signal divided from the system clock.

7-9 VCR Video

(1) Luminance Signal Recording System



39
34
AGC DET
CCD
VIDEO 1N
28
VIDEO AGC
F. B CLAMP
LPF
YNR Y/C COMB
3 MHz LPF
VIDEO OUT
26
6dB AMP
QV/QH INSERT
AMP
21
FM MOD
MAIN EMPH
NL EMPH
DETAIL ENH
CLAMP
22
clock
53
data
54
chip select
55
REC FM EQ
W/D CLIP
FM AGC
REC COLOR
+
REC CURRENT AMP
73
SP H'D
66
SLP H'D
69
70
IC301 LA71207M

Fig. 7-18 Luminance Record Process

1) Outline

Fig. 7-18 shows the video signal recording system.

The selected video input signal goes to pin 28 of Luma/Chroma processor IC (IC301). And then it enters VIDEO AGC circuit. The gain of AGC circuit is controlled by AGC detector so that the output is constant (approx. 2Vp-p). The output signal of AGC is clamped by the FBC(Feed Back Clamp) circuit. This signal appears at pin 26, after being amplified at the internal video amp and driver.

The output signal from the clamp circuit enter the detail enhancer circuit. In the detail enhancer circuit, the low level high frequency video signal is emphasized to improve the original signals frequency characteristics.

onlinear emphasis circuit is employed to improve S/N and frequency response characteristics together with the following main emphasis. Noise effects the FM wave at a higher frequency, so the S/N can be improved by emphasizing the higher frequency before recording and by suppressing the play signal during demodulation.

The difference of non linear emphasis from main emphasis is that the emphasis characteristics change is depending on the input level. The gain of the emphasis circuit is inversely proportional to the level of the high frequency component of the signal. That is, if the high frequency portion of the signal is low the main emphasis circuit will amplify the signal.

2) Main Emphasis Circuit

The dynamically emphasized luminance signal is now supplied to the main emphasis circuit where all the high frequency components of the signal are boosted more than the low frequency components. The boosting action is required for the high frequency components because in the FM recording method, the noise of the playback signal increases in proportion to the modulated signal frequency or low level signal. By using the nonlinear emphasis and main emphasis system, the total S/N ratio is increased. The output of the main emphasis circuit is then supplied to the white and dark clip circuit.

3) White and Dark Clip Circuit

After emphasis is performed, large overshoots and undershoots in the luminance signal are limited to a specified level. This is done to avoid FM over modulation. The output of the main emphasis circuit is then supplied to the FM modulator circuit.

4) FM Modulator

A. The amplitude of the FM signal is limited, so the signal is recorded on tape near the maximum record level which increases the S/N ratio.

B. The FM carrier is se to 3.4MHz (at the Sync tips) and the deviation to 4.4MHz by inside IC circuit (for the white peak). The actual device which constitutes the FM modulator is a stable multivibrator.

This multivibrator generates a sine wave output of variable frequency.

The frequency of sine wave is governed by the level of the processed video signal at any given point. Therefore, the processed video signal varies the frequency of the sine wave which is frequency modulation (FM). During playback in SLP mode, the crosstalk of the adjacent track is more apparent than is standard mode. It appears as jitter and noise on the monitor. To reduce this noise from the screen, the FM carrier frequency has to be 1/2fh shifted up during recording. This is done by applying the head switching pulse to the FM modulator control pin57 during SLP recording. The FM modulated luminance signal goes to record equalizer circuit and it is mixed with chrominance signal at the record Amp circuit inside video IC.

5) Record Amp

The frequency modulated luminance signal and chroma signal are mixed in the record amp of pre-amp block inside video IC. Then this mixed signal is amplified and supplied to the video heads via the rotary transformer and recorded on the magnetic tape.

Tape speed selection determines which video heads will be used. That is, signal output from pin 66 (SLP) and 73 (SP) of pre-amp block are supplied to video heads.

Control signal of speed mode is applied to pin 53(clock), 54(data), 55(chip select) of video IC from Micom IC.

(2) Luminance Signal Playback System

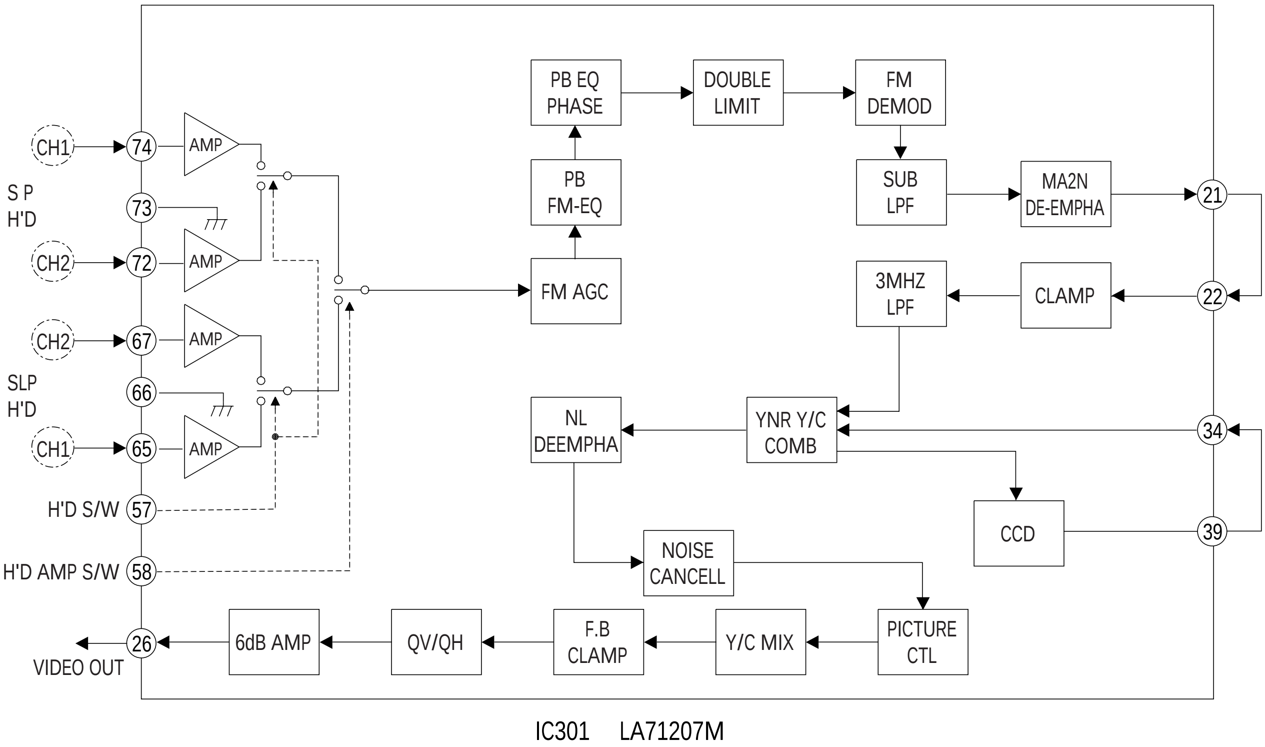

CH1
74
AMP
S P
H'D
73
CH2
72
AMP
CH2
67
AMP
SLP
H'D
66
CH1
65
AMP
H'D S/W
57
H'D AMP S/W
58
26
VIDEO OUT
PB EQ
PHASE
DOUBLE
LIMIT
FM
DEMOD
PB
FM-EQ
SUB
LPF
MA2N
DE-EMPHA
21
FM AGC
3MHZ
LPF
CLAMP
22
NL
DEEMPHA
YNR Y/C
COMB
34
CCD
39
NOISE
CANCELL
6dB AMP
QV/QH
F.B
CLAMP
Y/C MIX
PICTURE
CTL
IC301 LA71207M

Fig. 7-19 Luminance Playback Process

1) Outline

The video signal recorded on the tape is picked up by CH1,CH2 head and is supplied to pre-amp block via rotary trans. During playback, as per the speed, SP and SLP head is determined by Pin60 of respectively.
CH1 signal inputs to Pins 65 and 74 while CH2 signal inputs to Pins 67 and 72 of video IC. The pick up operation is controlled by the head switching pulse inputted to pin 57. During the high portion of the switching pulse, CH2 is picked-up and just the opposite is true for CH1. In the pre amp IC, the FM signal is amplified 60dB and this signal is applied to FM AGC.

2) FM AGC AMP

At the FM AGC Amp (FM), signals are automatically balanced. One of the AGC circuit outputs is fed to AGC detector circuit which detects signal level fluctuations. The detector output signal is applied to the FM AGC Amp to keep the output constant.This output is applied to the PB FM EQ block. FM EQ is correct the phase distortion and level. The signal through PB EQ circuit is applied to the double limiter.

3) Double Limiter Circuit

A FM signal on the tape which contains AM components will be read during playback. If there is a severe AM component, a drastic drop in FM carrier can occur. This lack of FM carrier can be called a noise region. Double limiting is used for improving the S/N ratio and carrier loss. The playback FM signal is split into two paths, one goes to high pass filler and sub-limiter. The other goes to the main-limiter after passing through a LPF. ONE path of the FM signal goes to the high pass filter, so that the low frequency(AM) component can be removed, and the other carrier is supplied to the sub-limiter. The output signal of sub-limiter is mixed with the signal from the low-pass filter and sent to the FM demodulation circuit.

4) FM DEMODULATOR

The FM demodulator consists of a stable mono multivibrator balanced modulator (BM) and a LPF. The FM demodulator circuit first converts the FM signal to a pulse width modulator signal. Then the circuit smoothes the PWM signal to demodulate the video signal. This demodulated signal is fed to the LPF to remove its FM carrier component and any other harmonics. The demodulated luminance signal outputs from Pin 21 and is applied to the 3MHz LPF through main deemphasis circuit. To reduce demodulation noise, the output of the 3MHz LPF is applied to a non-linear deemphasis circuit through YNR circuit.

5) Main De-emphasis Circuit

Before modulation, main emphasis was performed. Because the high frequency components of video signal were boosted more than the low frequency components in the recording mode, main deemphasis must be performed to obtain a normal video signal. That is this circuit returns the emphasized high frequency component to the original value.

6) Non Linear De-Emphasis Circuit

This circuit is the counter part of the dynamic pre-emphasis circuit during recording. The characteristics are also the opposite of those in recording.

7) Drop Out Compensator/YNR Circuit

This circuit compensated for missing parts of the FM signal due to dust, dirt on the tape or irregular tape coating, etc. The clamped video signal is supplied to the CCD 1H circuit. The 1H delayed video signal from CCD block is also supplied to the 6MHz LPF to reject the sampling noise of CCD IC.

Then, the output of LPF is applied to Pin 34 of video IC. When the DOC detector detects the FM loss, a 1H delayed video signal is added in place of the missing signal.

8) Noise Canceller Circuit

The noise canceller circuit removes the high frequency noise contained in the video signal which has the reverse characteristics of the detail enhance in the recording mode. The output of the noise canceller circuit is supplied to the Luminance and Chrominance mixer circuit. The mixed chroma and luminance signal are then output at Pin 26.

(3) Chroma Signal Recording System

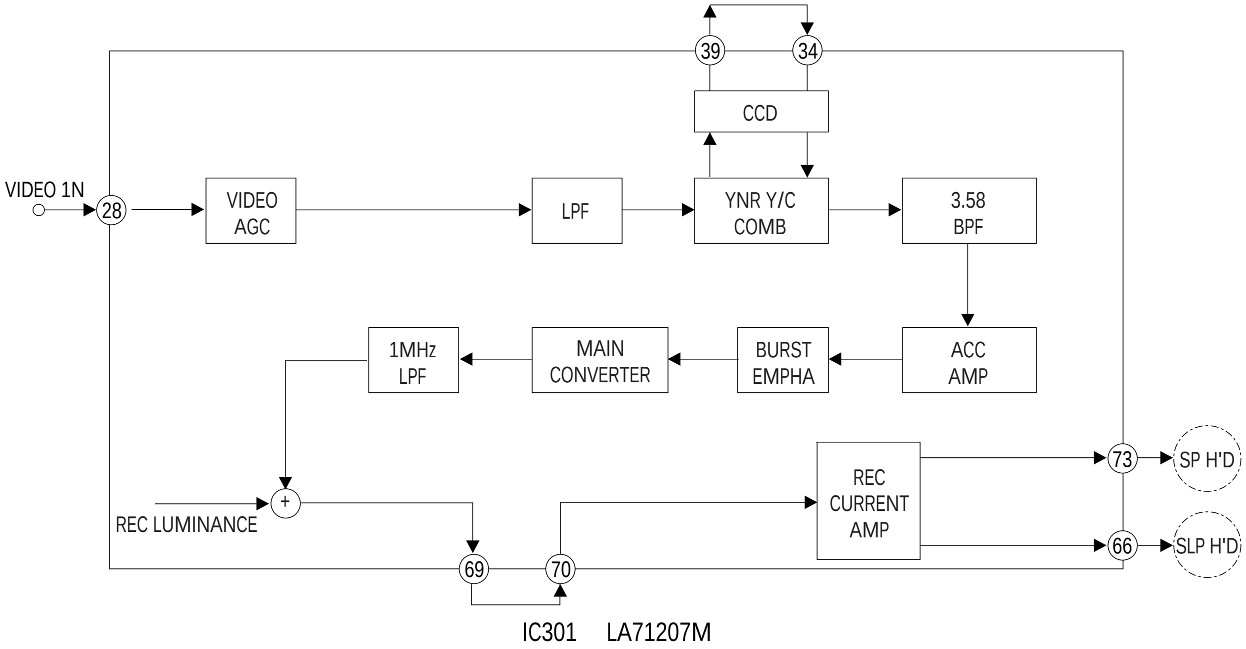


Fig. 7-20 Chrominance Record Process

1) Outline

Fig. 7-20 shows the chroma signal recording system. The chroma signal recording process is performed by video IC. The input video signal is fed to Pin 28 of IC and supplied to Y/C COMB circuit through AGC AMP.

The output signal of Y/C COMB circuit is applied to ACC amplifier. The ACC amplifier is used for both burst ACC which keeps the burst level at a constant value in recording and the color ACC which controls the reference level of the burst ACC with the color signal level. The color ACC works to maintain a relatively high output level by boosting low level input signals to improve color S/N ratio. The signal is then applied to the burst emphasis circuit. Burst emphasis emphasizes the burst signal by +6dB during recording and feeds it to the main converter. The 3.58MHz signal are mixed in the main converter to perform frequency conversion.

The main converter is a mixer having the two types of output components which are the added frequency of 4.21+3.58=7.8MHz and the difference frequency component 629KHz.

Added frequency is rejected by the 1MHz LPF and the 629KHz down converted chroma signal is supplied to the luma/chroma mixer of pre-amp block and then recorded on the tape via the record amp and heads.

AFC detection is performed with the head switching pulse and the fh signal generated from 321fh VOC output. The detector output controls the VCO frequency which will be locked precisely at 320fh (5.035MHz).

he 320fh signal is counted down to 1/8 and the resultant 40fh (=629KHz)carrier signal is phase shifted triggered by each horizontal sync signal which is wave shaped as a 50% duty pulse by the pulse generator.

The direction of the rotational phase shift depends on the levels of the rotary head switching signal from pin 57 and when the switching signal is "H" level, the phase is retarded by 90 degrees for every 1H, and when is is at a "L" level it will advance by 90° for every 1H this 40fh phase shifted sub-carrier (PSSC) signal enters the sub-converter and the 3.58MHz carrier signal is locked at the color burst frequency by the record APC.

The PSSC signal is frequency converted into 3.58MHz +/-629KHz. Then 4.21MHz component (=3.58MHz+/-629KHz)is extracted through a 4.2MHz BPF.

The 4.21MHz signal is used as a carrier signal for down conversion of the color signal as described previously.

2) ACC (Automatic Color Gain Control) Circuit

The ACC is used as burst ACC in the LP mode, however it is also used for peak ACC in the SP/SLP mode.
The purpose of using two different ACC operations is to improve the overall Chroma S/N ratio during playback. In SP and SLP, there is H-sync alignment. This indicates that there is bust alignment as well. Whenever two video tracks overlap or a video head picks up crosstalk from an adjacent track, beats are produced during playback. Perhaps the most noticeable beats are produced by H-sync and burst. But in SP and SLP, these beats occur right at H-sync and burst and are out of the picture. In LP, however, there is no H-sync alignment and these beats can be seen in the picture. To keep the beats at a minimum in LP, we keep the burst level constant so that the beat intensity is constant. We know that ACC acts to improve the color S/N,and in LP, the ACC detector locks at the burst level,and keeps it constant. Thus we have ACC operation with the least beats. In SP and SLP, the beats caused by burst overlap are out of picture, so we don't really mind if the burst level changes or not. To improve the color S/N ratio even more,we use peak ACC in SP and SLP.That is,if the chroma level is too low to record, the amplification degree is increased by 3dB. However, the chroma level is sufficient for recording, this peak ACC is changed to burst ACC to avoid over amplification. By changing the ACC according to picture color content, the burst level may vary. The color ratio improvement is based on the color content itself during SP and SLP provides a somewhat better S/N ratio.

3) Four (4) Phase Rotation

CH1 is advanced 90° every channel, while CH2 is delayed 90°. When the frequency is set to 629KHz, if phase is shifted by +/-90 it becomes 629KHz +/-90. The 40fh+/-90 (=629KHz +/-90)is balanced modulated via fsc (3.58MHz) depending on which side band is detected. That is, the fs +40fh+/-90 (4.2MHz +/-90) of total frequency is supplied to the main converter. In record mode, the signal operates same as in play back mode. During playback, the phase is returned to original state.

4) AFC (Automatic Frequency Control) Circuit

Luminance signal is input to H-sync separator. The H-sync is separated and supplied to phase comparator.
This signal can be described as fh (Horizontal Sync frequency of input video signal). However, VCO oscillates at 320fh (5.035MHz). This 321fh is counted down by 1/8 and 1/40 and resultant fh is supplied to phase comparator. fh and fh are supplied to the phase comparator for comparison of their phases.
After comparison, the phase
differences is output to VCO (320fh) in terms of error voltage. Therefore, the oscillation frequency of VCO is controlled by this error voltage. That is, if the fh phase is changed by H-sync signal fh, error voltage is changed accordingly and if the phases of fh and fh are met due to change of VCO oscillation frequency, error voltage does not feedback. 320fh VCO is oscillated in accordance with phase sync at fh. Therefore, 40fh input to sub converter by phase shift is always sync horized with phase.
The AFC loop performs the same operation during record and playback. In recording, phase of VCO is in accordance with H-sync signal of current video signal.
Which in playback, the phase sync of VCO is consistent with H-sync signal which is separated from the video signal.

(4) Chroma Signal Playback System

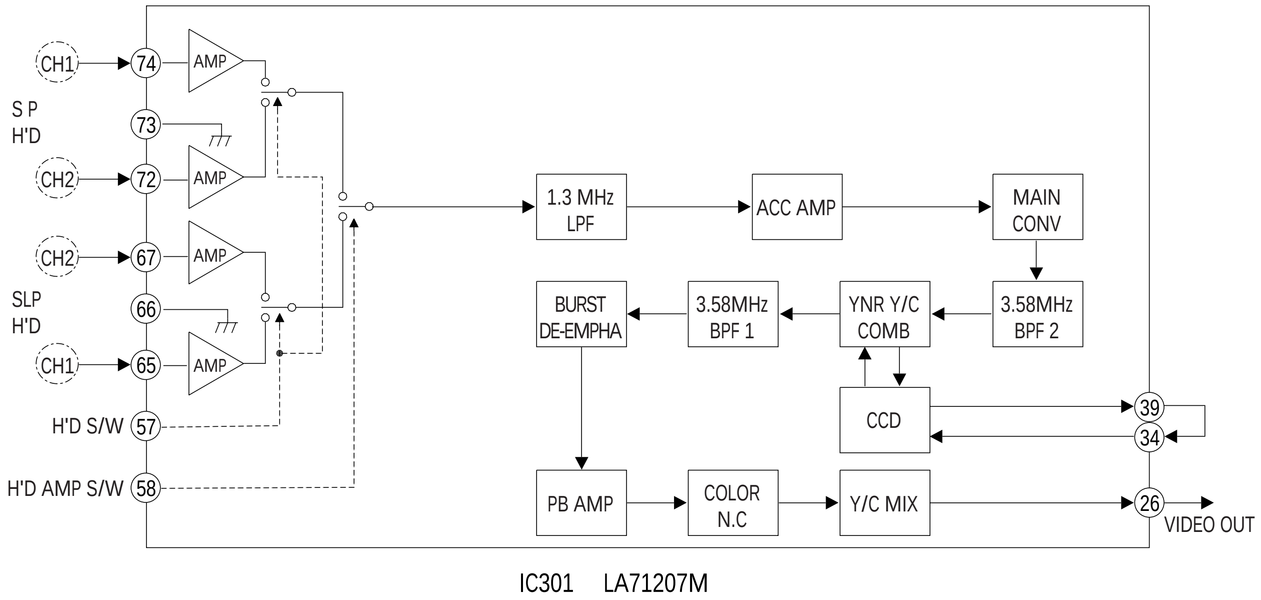


Fig. 7-21 Chrominance Playback Process

1) Outline

Fig. 7-21 shows the chroma signal playback system.

The FM signals picked up by the CH-1 and CH-2 video heads are supplied to the pre-amp block.

The FM signal from CH-1 and CH-2 are alternately selected by the switch and output signal as a continuous signal. Goes to the ACC amp through the 1.3MHz LPF. The 1.3MHz LPF is used for passing only down converted 629KHz chroma signal in the playback mode. The ACC amp stabilizes the 629KHz color signal level.

The output color signal from amp then enters the main converter circuit. In the main converter circuit this signal is mixed with the 4.21MHz phase shifted carrier signal and converted into 4.21MHz + 629KHz signals.

2) Main Converter

Inside of IC, the main converter converts the 629KHz rotational chroma signal to a 3.58MHz non-rotational signal. The two inputs of this main converter are the 629KHz signal, which comes from the output of the ACC, and a 4.21MHz which has the same rotational phase as the 629KHz signal. It is important that the rotational phase of the 4.21MHz signal is the same direction as the 629KHz playback chroma signal. To obtain the 3.58MHz non-rotational stable signal, the same direction rotational signal should be mixed with the rotational chroma signal.

During the conversion process, the phase is also mixed by the frequency. Therefore, when 629KHz is subtraced from 4.21MHz,the result is the non-rotational 3.58MHz stable signal. The output signal of the main converter goes to the 3.58MHz BPF. In the 3.58MHz BPF,the conversion noise(4.21MHz+629KHz=4.8MHz) is rejected and the 3.58MHz color signal goes to the comb filter.

In the comb filter, the crosstalk components due to the adjacent track are eliminated and the color signal is applied to PB-AMP, BURST De-Emphasis, Killer and are applied to LUMA and CHROMA mixer input through the CNC block.

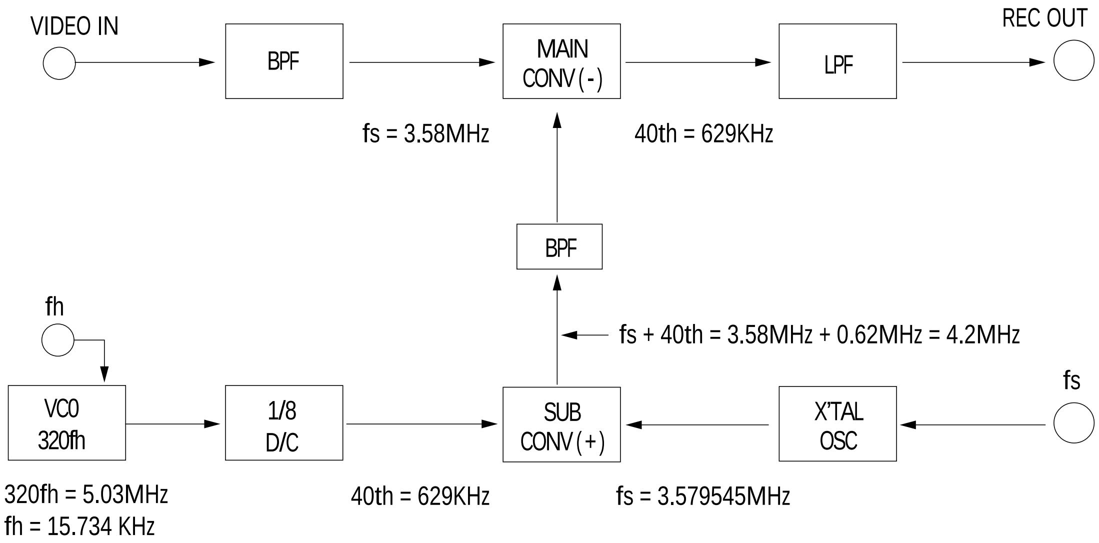

VIDEO IN
BPF
MAIN CONV(-)
LPF
REC OUT
fs = 3.58MHz
40th = 629KHz
BPF
fh
fs + 40th = 3.58MHz + 0.62MHz = 4.2MHz
fs
VCO 320fh
1/8 D/C
SUB CONV(+)
X'TAL OSC
320fh = 5.03MHz
fh = 15.734 KHz
40th = 629KHz
fs = 3.579545MHz

Fig. 7-22 Block Diagram of Color REC mode by the method of a Down Converter

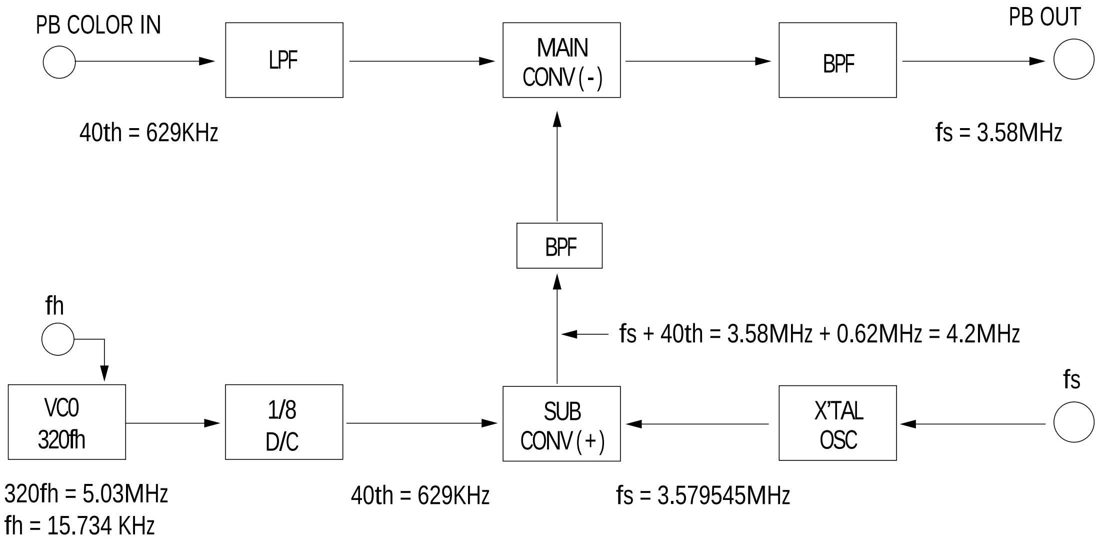

PB COLOR IN
LPF
MAIN CONV(-)
BPF
PB OUT
40th = 629KHz
fs = 3.58MHz
BPF
fh
fs + 40th = 3.58MHz + 0.62MHz = 4.2MHz
fs
VCO 320fh
1/8 D/C
SUB CONV(+)
X'TAL OSC
320fh = 5.03MHz
fh = 15.734 KHz
40th = 629KHz
fs = 3.579545MHz

Fig. 7-23 Block Diagram of Color PB mode by the method of a Down Converter

7-10 Hi-Fi Audio

(1) Outline

Hi-Fi circuit consists of HiFi audio LPF,VCO,BPF,FM detect circuit and switching noise compensator, PRE-AMP etc. Linear audio consists of an ALC circuit,REC EQ circuit and a PB EQ circuit.
Hi-Fi and Linear audio share the same input selector,output selector and mute circuit.

1) REC Mode (L-CH Only)

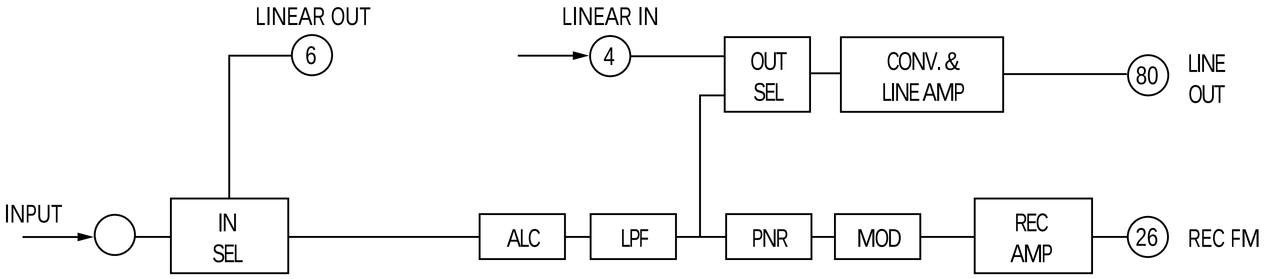

LINEAR OUT
6
LINEAR IN
4
OUT SEL
CONV. & LINE AMP
80
LINE OUT
INPUT
IN SEL
ALC
LPF
PNR
MOD
REC AMP
26
REC FM

Fig. 7-24 REC Mode (L-CH Only)

2) PB Mode (L-CH Olny)

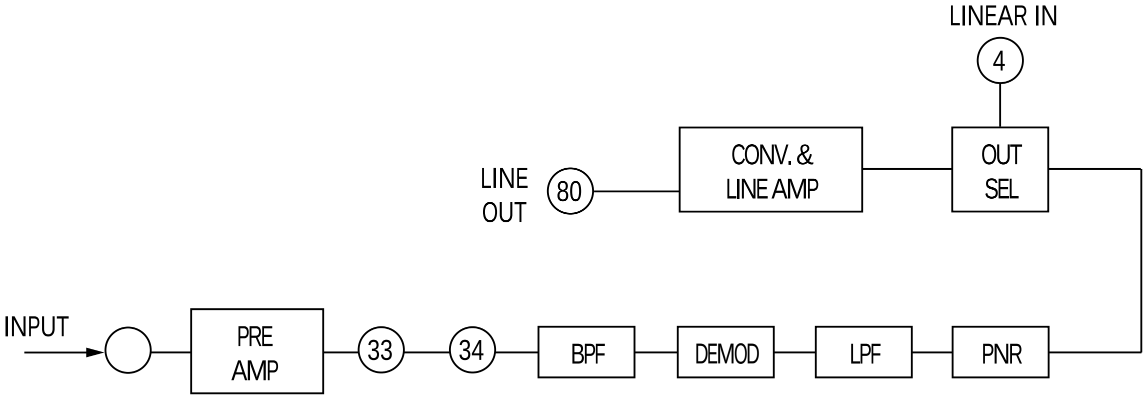

LINEAR IN
4
LINE OUT
80
CONV. & LINE AMP
OUT SEL
INPUT
PRE AMP
33
34
BPF
DEMOD
LPF
PNR

Fig. 7-25 PB Mode (L-CH Only)

(2) Block Description

1) Input Selector

Input selector outputs 1 signal from 4 different signals received. It outputs 1 selected signal from tuner,rear,front.

2) Normal(Linear) Selector

Two signals,L-CH and R-CH are inputed to Hi-Fi IC.But,linear audio is capable of receiving only one signal.Therefore,the 2 input signals must be selected. Usually,the outputs are mixed signals of L-CH and R-CH unlike the input selector,the normal selector does not amplify the selected signal.

3) Output Selector

It selects to output Hi-Fi L-CH,Hi-Fi R-CH,LINEAR and MIX(Hi-Fi+LINEAR) signals with the final output IC pin 78 (R-CH) and pin 80 (L-CH).

4) Output ALC(Convertor)

ALC is used because when the input level of RF converter gets bigger,it shows up as noise on the screen. But,this block is not used this model(ALC OFF)

5) PNR(Peak Noise Reduction)

It is a type of emphasis,de-emphasis function to eliminate noise during modulation /demodulation PNR operates as that of VHS FORMAT to reduce noise.

6) Audio Limiter

Before modulating the signals from PNR block,it limits signals exceeding the size limit to max deviation of +/- 150KHz.

7) VCO(Voltage Control Oscillation)

It is a modulation functionthat oscillates 1.3MHz (L-CH) and 1.7MHz (R-CH).

8) RF LPF

It is a function to eliminate the harmonic components of Hi-Fi carrier formed during VCO,which may affect other block. It’s pass-band approximately 2MHz.

9) MIXER

It mixes the Hi-Fi carrier formed in L-CH and R-CH. However,due to the frequency difference between L-CH and R-CH,when equal amount of R-CH is recorded to tape,R-CH is must smaiier than L-CH.
Therefore,the R-CH output is approximately 10dB bigger than L-CH.

10) Current Amp

It is the final amplifier of the mixed Hi-Fi carrier IC pin 28’s resistance controls current, which change the size of IC pin 26.

11) AGC(Auto Gain Control)

It maintains uniform size of Hi-Fi envelope,which is inputed by pre-amp in play back mode.

12) BPF(Band Pass Filter)

L-CH and R-CH each has BPF. The center frequency is same as carrier frequency.
It is used to receive only Hi-Fi carrier from all signals inputed to pre-amp.

13) SW Noise Compensation

Unlike the linear audio,insted of using fixed head,drum heads are used,which creates halting points However,in order for the audio to be headed continuously,the damages from halting points are modulated,which creates noise. SW noise compensation is a block to minimize this particular noise.

14) Hold Pulse

It makes standard signal(Pulse) to compensate SW noise.

15) DET(Hi-Fi/LINEAR)

From the Hi-Fi envelope inputed from pre-amp,it decides whether the signal passing through L-CH BPF is Hi-Fi or LINEAR tape it’s size(the signal passing through BPF is below 10mVpp, it is not Hi-Fi,therefore,it output linear)

16) DOC(Drop Out Compensation)

If demodulation is conducted without properly treating the damage on Hi-Fi envelope caused by scratch on the tape,noise occurs. In order to improve this noise occurrence,DO DET compensate the drop-out using the same methode of compensating the switching noise when the damage on the envelope ranges 10~15mVpp.

17) ENV DET

To obtain optimal tracking,envelop must be peak to peak and micom should be in DC. It is a function to convert Hi-Fi envelop to DC. If it is lower than 0.8V at micom,it sends linear mode date to HiFi IC.

18) Serial Data Decoder

It receives IIC BUS to enable the operation of inner block and decodes into serial data.

(3) Pin Port Description (Tuner Mode ; 1KHz, 100% Modulation Input)

PIN NO.	PIN NAME	DC VOLT.	SIGNAL	REMARK
1	LINE MUTE	0 / 5	-	Reduce the line out noise.
2	Linear out to TM	4.2 V	-17 dbm	Converter Model Only
3	Vcc 9V	9 V		Power Supply for in/out Select
4	Linear Input	2.5 V	- 28.2 dBV	Audio from A/V IC
5	Vcc 5V	5 V		Power Supply for in/out Select
6	Linear out ti A/V	2.5 V	-21.5 dBV	Audio out to A/V IC
7	EXT1-INPUT (L)	0	-28.2 dBV	Line Input 1 (FRONT)
8	ALC Detector	-		ALC Detector for RF converter
9	EXT2-INPUT (L)	0	-28.2 dBV	Line Input 2 (REAR)
10	GND	-		
11	EXT3-INPUT (L)	0	-28.2 dBV	Line Input 3 (DVD)
12	Monitor Input (L)	2.5 V		DVD Audio (L) Input
13	Input changeover switch output (L)	2.2 V	-21 dBV	PB/REC sitch output . Transform R/P signals into DC.
14	ALC Input (L)	2.5 V	-21 dBV	ALC Input Terminal
15	Vcc 5V	5 V		Power Supply for in/out Select
16	1/2 Vcc	2.5 V		1/2 Vcc Terminal
17	Rec Mute Terminal	0 V		GND (Not in use)
18	NR Waiting Det	-	-	Terminal for waiting dector
19	NR Waiting Filter	2.5 V		NR Waiting Filter 1 For L-CH
20	NR Waiting Filter	2.5 V		NR Waiting Filter 2 For L-CH
21	CCA Reference			CCA Reference for L-CH
22	NR Empha			NR Empahasis for L-CH
23	Tracking DC out	0 ~ 5 v		Hi-Fi Env Det Level Output
24	Audio Pb FM1	2 V / 4 V		Audio Playbak FM 1 input (H)
25	GND			Hi-Fi PRE-AMP GND
26	REC Current OUT			Rec current out to Head
27	Audio Pb FM2	2 V / 4 V		Audio Playbak FM 2 input (L)
28	Crrent adjust	2.4 V		Rec Current adjust point
29	Alc detector			ALC detection
30	Hi-Fi detector			Hi-Fi/ Normal detect
31	Monitor	2.5 V		FM Monitor
32	Vcc 5V	5 V		Power Supply for Hi-Fi
33	Pb FM Out	2.5 V		Output of H'D Amp in PB Mode
34	Pb FM Input	-	350 mVp-p	Input of FM in PB Mode
35	GND			GND FOR LOGIC
36	Vcc 5V	5 V		Power Supply for LOGIC
37	Serial data input	0 / 5 V		
38	Serial clock input	0 / 5 V		
39	Audio head s/w	0 / 5 V		Head s/w 30 hz input
40	Mts Mode out			1V : mo / 2V : St / 3V : Bi

PIN NO.	PIN NAME	DC VOLT.	SIGNAL	REMARK
41	CCA Reference			CCA Reference for R-CH
42	NR Empha			NR Empahasis for R-CH
43	NR Waiting Filter	2.5 V		NR Waiting Filter 2 For R-CH
44	NR Waiting Filter	2.5 V		NR Waiting Filter 1 For R-CH
45	NR Waiting Det	-	-	Terminal for waiting dector
46	Vcc 5V	5 V		Power Supply for in/out Select
47	ALC Input (R)	2.5 V	-21 dBV	ALC Input Terminal
48	Input changeover switch output (R)	2.2 V	-21 dBV	PB/REC sitch output . Transform R/P signals into DC.
49	Mute Control			
50	GND			GND FOR ANALOGE
51	FSC IN		200 mVp-p	3.58 Mhz input
52	DC Reg	1.2 V		Bandgap Power supply for MTS
53	Stereo PLL filter	3.8 V		LPF for Stereo PLL
54	Vcc 5V	5 V		Power Supply for MTS Select
55	Pilot Canceller f	3.8 V		CTL Pin of cancel signal for pilot C.
56	FM Filter			Filter for making stable dc
57	SIF Input			SIF Audio input from TM Block
58	REG Filter	4.5 V		Filter of reference voltage source.
59	Filter Auto Adjust	3.8 V		Loof filterof PLL for auto adj
60	Pilot Det Filter	3.8 V		Detection for pilot detection circuit
61	PC_DC_MO	3.3 V		Absorbing the DC offset
62	PCDOUT	3.8 V		Absorbing the DC offset
63	PCDIN	3.8 V		Absorbing the DC offset
64	PCDBXIN	2.6 V		Absorbing the DC offset
65	Main V/I convert	3.8 V		Converting the voltage of signal
66	SPE Det V/I convert	3.8 V		Connecting pin of smooth capacity of detection circuit.
67	Spectral DET			Converting the voltage of signal
68	Wide Band Det			Connecting pin of smooth capacity of detection circuit.
69	EXT1-INPUT (R)	0	-28.2 dBV	Line Input 1 (FRONT)
70	GND			GND FOR MTS
71	EXT2-INPUT (R)	0	-28.2 dBV	Line Input 2 (REAR)
72	Wid det V/I convert	3.8 V		Converting the voltage of signal
73	EXT3-INPUT (R)	0	-28.2 dBV	Line Input 3 (DVD)
74	Monitor Input (R)	2.5 V		DVD Audio (R) Input
75	PCDCOSPE			Absorbing the DC offset
76	PC_OUT_DBX	3.3 V		Absorbing the DC offset
77	LINE MUTE (R)	0 / 5	-	Reduce the line out noise.
78	Line out (R-CH)			
79	GND			GND FOR AUDIO
80	Line out (L-CH)			

7-11 Linear Audio

(1) Block Diagram

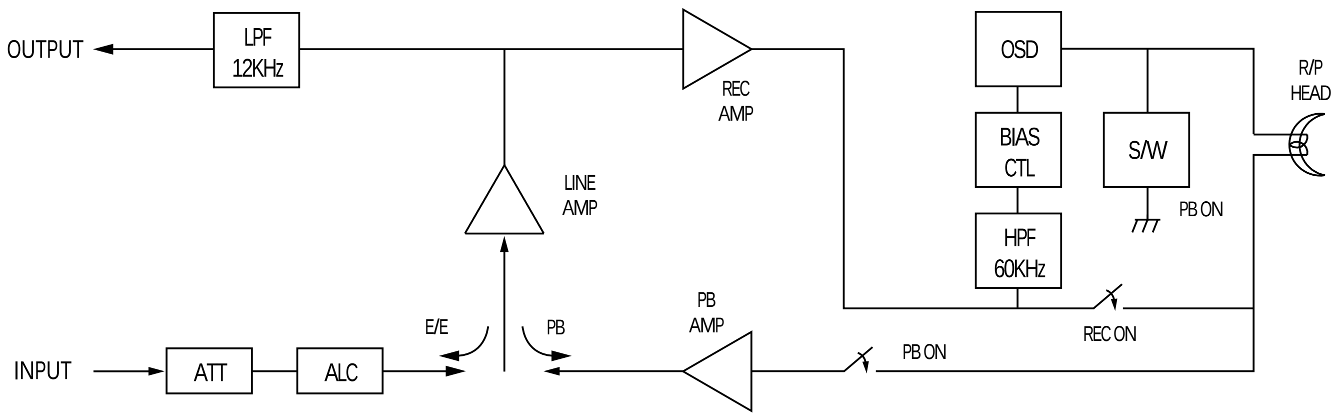


Fig. 7-26 Block Diagram

(2) Block Description

1) ATT (Attenuation)

Line amp is shared between PB mode and E/E mode, which reduces the recorded signal by 20dB and resister.

2) ALC (Auto Level Control)

If the signal level is lower than the reference signal (-6dBm) level, the output signal will equal the input signal. However, if the input signal is higher than the reference signal, the output will not equal the input and will gen erate uniform signal.

* ALC Application Purpose : Since linear audio is in AM (amplitude modulation) and uses magnetic recording device, it only records limited size and as the size of input signal increases, distortion increases. To prevent this occurance, mark sure the signal does not get bigger even if the level of distortion repodly increases.

3) LINE AMP

Line amp's gain is approximately 23dB. The purpose of the line amp is to amplify to 68dB in order to obtain the recorded signal on the tape during playback. As the amp gain increases, the passband decreases, which enables the amplification of low frequency. However, it is impossible to amplify frequency of 10KHz to 68dB with just 1 OPAMP. Therefore, to satisfy frequency and gain.

Line amp must be constructed into 2 steps of OP AMP. (gain is fixed within IC)

4) 12KHz LPF

There are various noises to signal output. The loudest noise is the “Video SYNC Frequency” of 15.734KHz

In order to eliminate the “Video SYNC Frequency”, “LPF” and “TRAP” are combined to “LPF”.

5) PB AMP

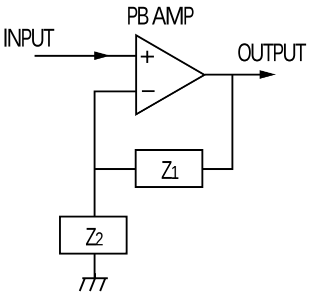


Fig. 7-27 PB Amp

The diagram to the left is the playback amp and the gain input/output are as follows.

$$Av = 1 + \frac{Z_1}{Z_2} \approx \frac{Z_1}{Z_2}$$

The playback characteristic of VHS format can be satisfied by using Z_1, Z_2 in the above equation.
PB amp gain should be designed to be approximately 45dB (1KHz).

6) REC AMP

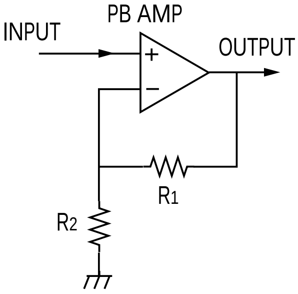


Fig. 7-28 REC Amp

The diagram to the left is REC AMP. The amp gain is approximately 14dB.
R_1 and R_2 that determine the gain is located inside the IC.
It is uniform and independent to frequency. Frequency characteristics should be considered when designing rec amp. The REC amp should be the opposite to playback characteristics.

7) OSC (Oscillation)

Oscillation frequency is 70KHz. It's size is approximately 45Vp-p. it operates on recoed mode. It is supplied to audio erase head and full erase head used to erase already recorded signals.
Also, it conducts “AM (Amplitude Modulation)” using oscillation signals.

8) BIAS Control

Oscillation coil is used in oscillation Bias. Coil output changes according to the impedance of F/E, A/E and R/P head connected to the coil.

9) 60KHz HPF

There must be standard signal for bias control and that signal uses HPF only to obtain oscillation signal that comes through R/P head.

10) S/W

The switch opens when recording, shorts during playback and exterior transister is used.

(3) Pin Port Description (IC301 ; LA71207M)

PIN NO.	PIN NAME	DC VOLT.	SIGNAL	REMARK
9	REC OUT	2.3	-2dBm	REC AMP OUTPUT (GAIN ; 14dB)
75	GND	0	-	
6	BIAS	REC:2.3 PB:0	70KHz+1KHz MIX 3Vp-p	It is grounded due to the switch inside of IC during playback. During recording, it operates on 60KHz input HPF
11	BIAS CTL	REC:4.3V PB:5V	-	The BIAS CTL voltage change depends on the external TR.
6	PB EQ (+)	2.3	-	PB EQ AMP INPUT (+)
5	PB EQ (-)	2.3	-	PB EQ AMP INPUT (-)
7	PB EQ SW	2.3	-	PB EQ AMP SLP SW
3	PB EQ OUT	2.3	-32dBm	PB EQ AMP OUTPUT
2	LINE PB IN	2.3	-32dBm	LINE AMP INPUT (PB)
58	A.MUTE	0	-	Operates at HIGH (5V)
76	INPUT 1	2.3	-27dBm	AUDIO INPUT : -27dBm
78	INPUT 2	2.3	-27dBm	AUDIO INPUT : -27dBm
1	Vref Filter	2.3	-	
80	Input 3	2.3	-27dBm	AUDIO INPUT : -27dBm
77	Vcc	5.0	-	
10	Line Out	2.3	-4dBm	AUDIO OUTPUT : -4dBm
79	ALC IN	2.3	-13dBm	ALC level selector

7-12 TM

(1) Outline

RF and frequency synthesized tuning system

General description : The receiving circuit consists of both ANT input and output circuits, channel selection circuit, PIF circuit and SIF circuit. The receiving circuit selects a desired broadcast signal from TV signals induced on an antenna and sends stable video and audio signals to their respective processing circuits.

(2) Tuner modulator block

As explained, this model is designed in one package to contain a RF MODULATOR BLOCK, TUNER BLOCK AND IF DEMODULATOR BLOCK. Its size is greatly reduced and other noise interference can be minimized to make performance high.

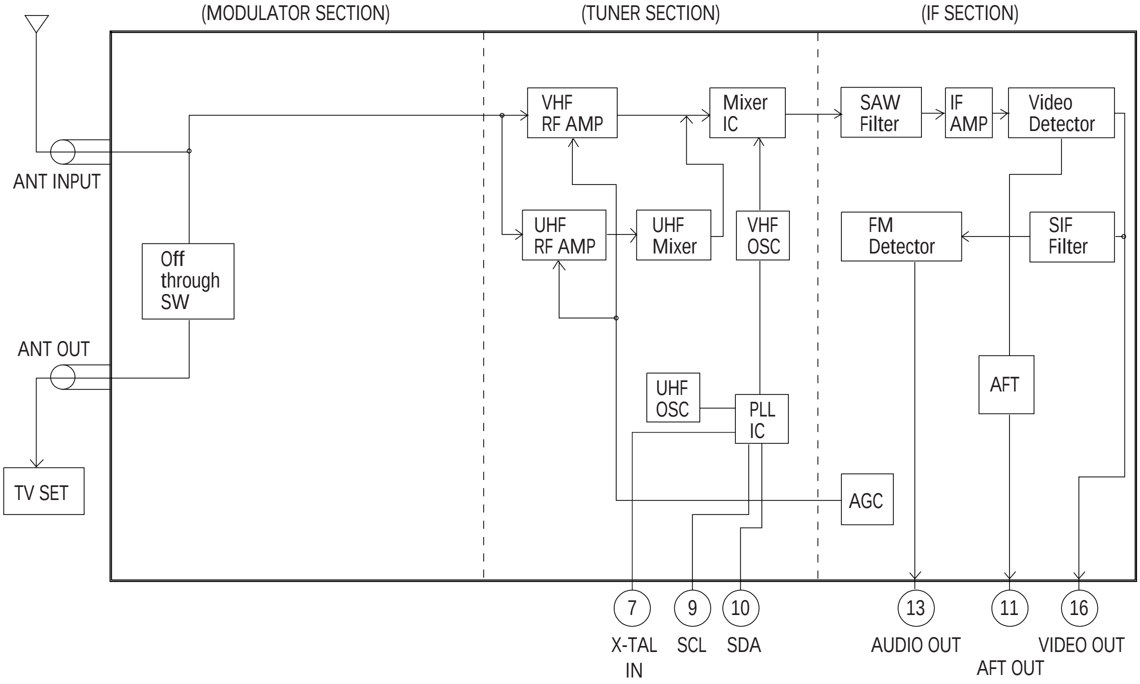

(MODULATOR SECTION)
(TUNER SECTION)
(IF SECTION)
ANT INPUT
ANT OUT
TV SET
Off through SW
VHF RF AMP
Mixer IC
UHF RF AMP
UHF Mixer
VHF OSC
UHF OSC
PLL IC
SAW Filter
IF AMP
Video Detector
FM Detector
SIF Filter
AFT
AGC
7
9
10
13
11
16
X-TAL IN
SCL
SDA
AUDIO OUT
AFT OUT
VIDEO OUT

Fig. 7-29 Tuner/demodulator Block Diagram

(3) Tuner Block

A. Low pass filter & high pass filter

This consists of IF trap circuit and UHF & VHF separation circuit. If the input signal is IF(45.75MHz), this filter prevents interference.

B. Single tune & RF AMP

This consists of a filter circuit, RF AMP, impedance conversion circuit, image trap and a single tuning circuit. It prevents noise and other interference signals. RF AMP is controlled by AGC come from IF DEMOD block.

C. Double tune

It consists of a double tuning circuit to improve rejection characteristic which results in a better band characteristic.

D. MOP IC (Mixer, OSC, PLL)

It consists a VHS and UHF OSC and mixer circuit. We applied a double balance mixer to have better rejection characteristic, it shows especially various beat characteristic.

It serects channels and contains charge pump band driver. The minimum step standard frequency 31.25KHZ.

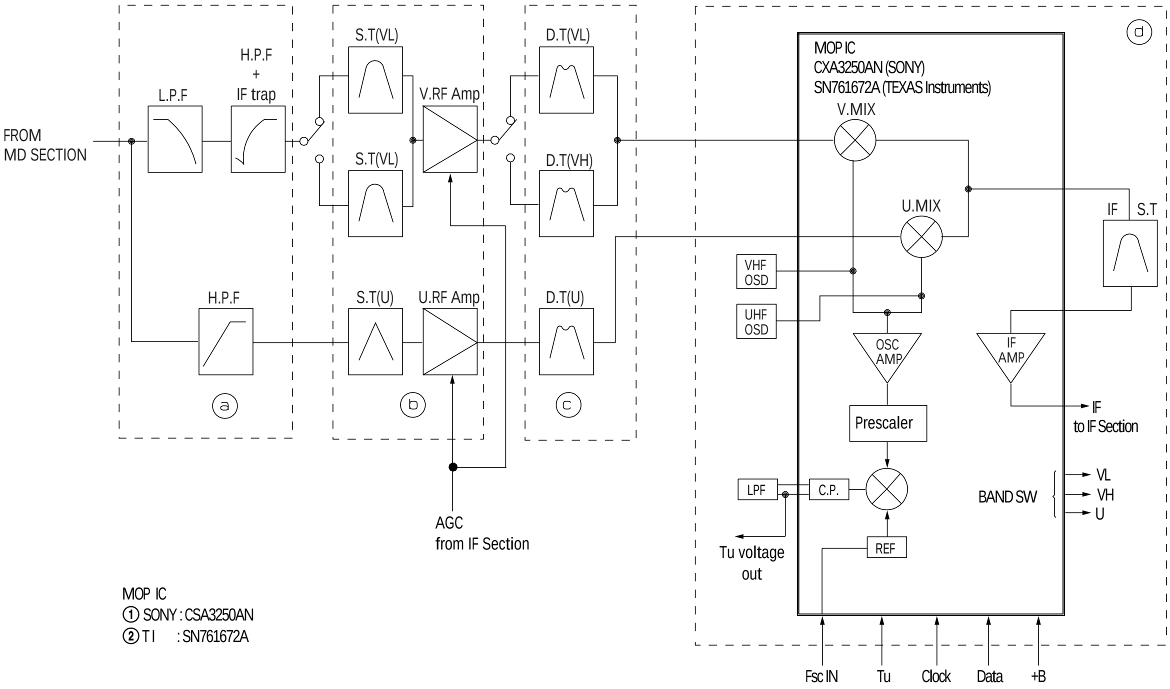

FROM
MD SECTION
L.P.F
H.P.F
+
IF trap
H.P.F
ⓐ
S.T(VL)
V.RF Amp
S.T(VL)
S.T(U)
U.RF Amp
ⓑ
D.T(VL)
D.T(VH)
D.T(U)
ⓒ
AGC
from IF Section
MOP IC
① SONY : CSA3250AN
② T I : SN761672A
ⓓ
MOP IC
CXA3250AN (SONY)
SN761672A (TEXAS Instruments)
V.MIX
U.MIX
VHF OSD
UHF OSD
OSC AMP
IF AMP
IF S.T
IF
to IF Section
Prescaler
LPF
C.P.
REF
BAND SW
VL
VH
U
Tu voltage
out
Fsc IN
Tu
Clock
Data
+B

Fig. 7-30 Tuner Section Block Diagram

(4) IF Block

A. SAW FILTER
It passes only needed band of the signal that is converted to IF frequency and decrease other band to minimize the effect of adjacent channel.

B. IF AMP
IF signal ,which is selected in SAW FILTER, is amplified in IF amp frequency enough to be detected. The IF AMP has parallel inputs & outputs structure and consists of 3 series step AMP.Each step has about 20dB gains.These gains are controlled by AGC voltage has maximum 63dB attenuation range.

C. RF AGC CONTROL
It is adjusted to determine RF AGC working point in tuner.

D. FM DETECTOR
After removing AM signal in the limiter AMP ,amplified SIF signal is applied FM detector. This FM detector is PLL detecting type.

E. AFT DETECTER
AFT automatically controls the OSC frequency in the tuner, so that it retains a constant level.
It is a quadrature detection type. The carrier, which is detected from video det is directly input to AFT detector .
The 90 degree delayed phase signal is input at the same time to AFT detector and ,the results come out.
Detected AFT voltage is amplified by DC AMP and then applied to pin 13.

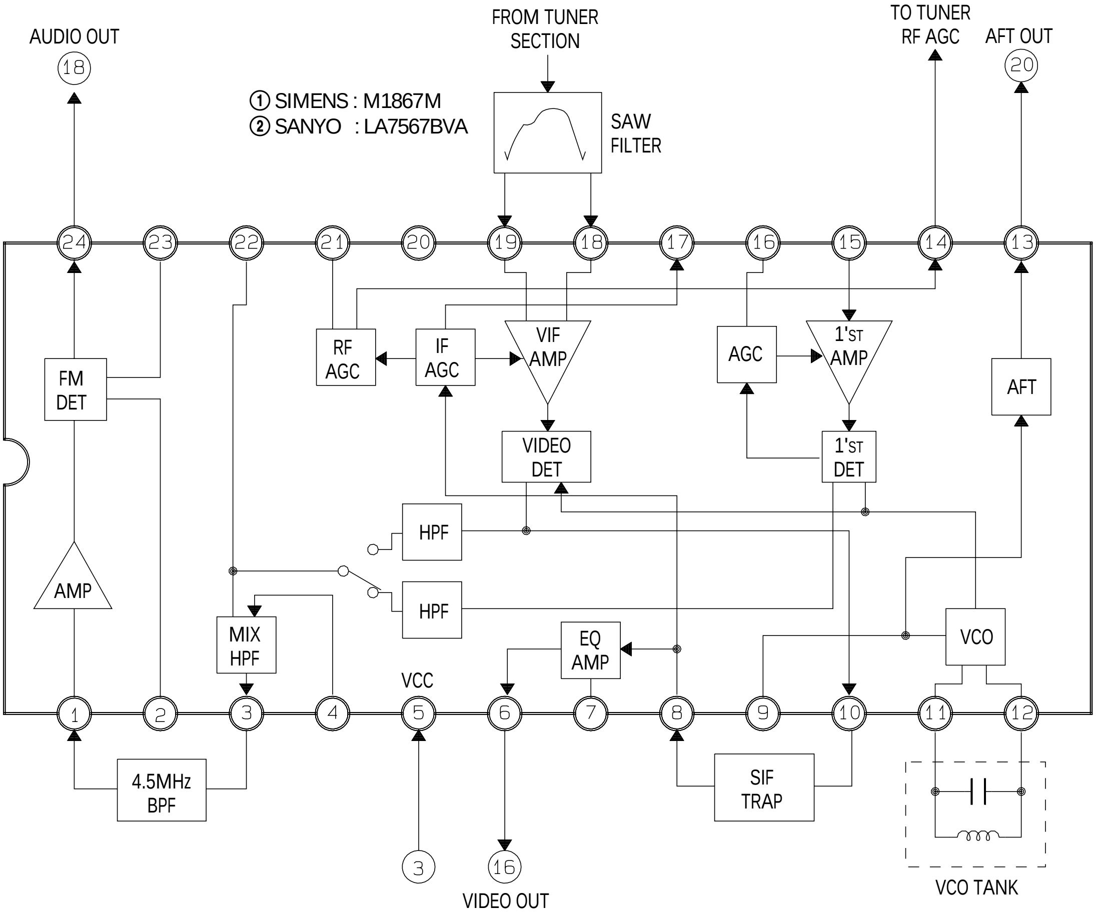

AUDIO OUT
18
FROM TUNER SECTION
① SIMENS : M1867M
② SANYO : LA7567BVA
SAW FILTER
TO TUNER RF AGC
AFT OUT
20
24
23
22
21
20
19
18
17
16
15
14
13
FM DET
AMP
RF AGC
IF AGC
VIF AMP
VIDEO DET
AGC
1'ST AMP
1'ST DET
AFT
HPF
HPF
MIX HPF
EQ AMP
VCO
VCC
1
2
3
4
5
6
7
8
9
10
11
12
4.5MHz BPF
SIF TRAP
3
16
VIDEO OUT
VCO TANK

Fig. 7-31 IF Ssection Block Diagram

7-13 OSD

The on screen display circuit consist of a character generator decoder, video mixer, sync separator and sync generator, sync detector circuit.
The data is decoded and generates characters in syncro with composite video signal applied pin 49, 50.
Also the sync detector circuit discriminates the presence of a video signal by detecting sync, if no sync is detected, a blue screen is displayed. In other word, the OSD circuit displays character on the video when there is a video signal or on blue screen when there is no video signal. (No sync).

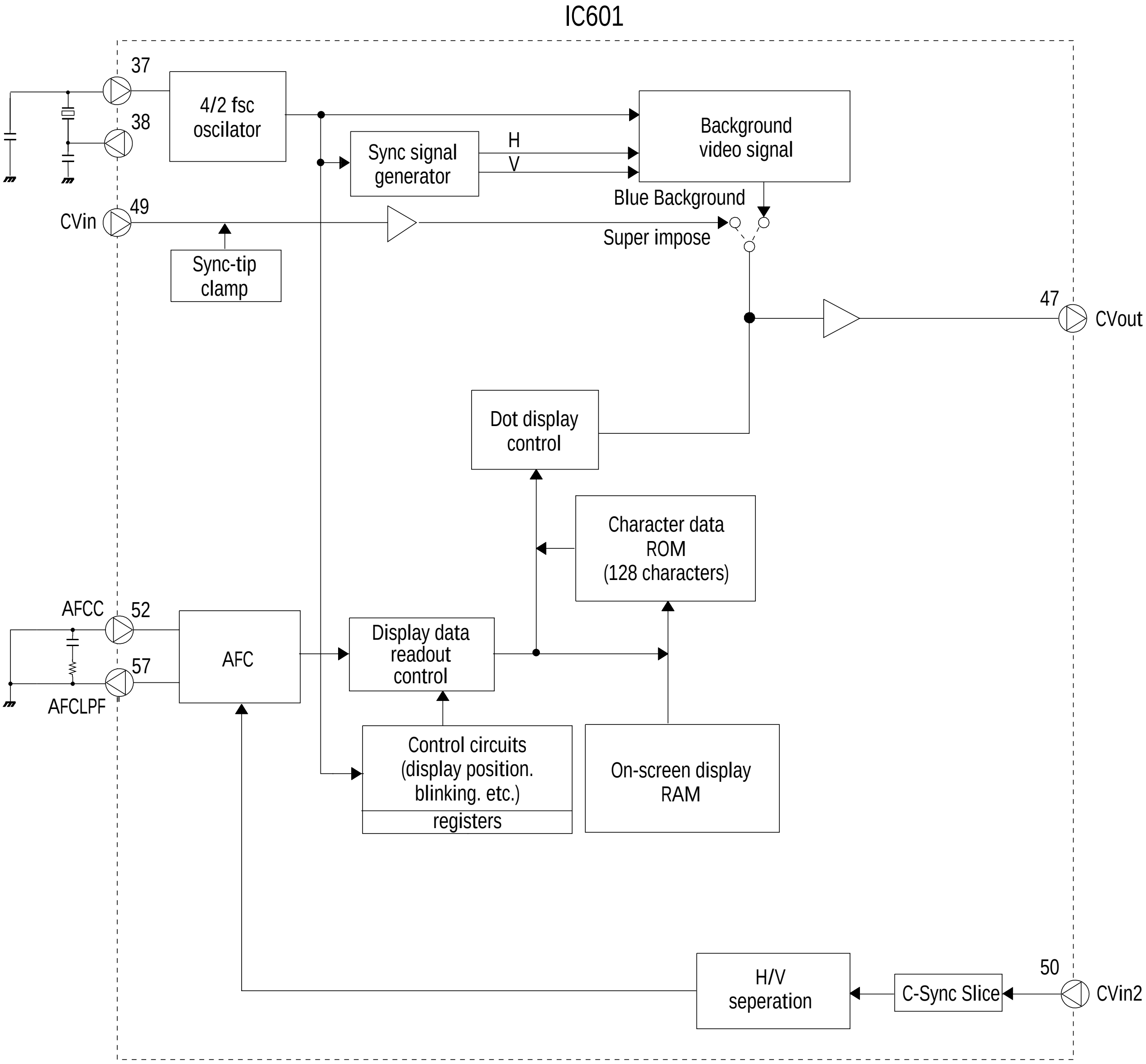

IC601
37
38
4/2 fsc oscilator
Sync signal generator
H
V
Background video signal
Blue Background
Super impose
49
CVin
Sync-tip clamp
47
CVout
Dot display control
Character data ROM (128 characters)
AFCC
52
57
AFCLPF
AFC
Display data readout control
Control circuits (display position. blinking. etc.)
registers
On-screen display RAM
H/V seperation
C-Sync Slice
50
CVin2

Fig. 7-32 Block Diagram

8. VCR Deck Operating Description

8-1 Features of Mechanism

The following items describe features of the mechanism in VCR.

(1) This VCR uses 3-motor system consisted of a cylinder motor, capstan motor, and loading motor. A capstan motor is used to drive the reel and the driving force is transmitted throuch the belt capstan. The cassette loading, tape loading, and mode shift operation are performed by the loading motor.

(2) The time duration from cassette-in to picture appearance is shortened by employing the loading drive mechanism (automatic transferring operation from the cassette loading to the tape loading by rotating the loading motor continuously), and by increasing the speed of the tape loading, etc

(3) Employment of the full loading system shortens time required to shift the mode such as STOP to PLAY-BACK picture display.

(4) To simplify wiring and others, the electrical components relating to operation of the mechanical deck, such as sensors, mode switch, servo microcomputer, etc. are mounted on the PCB arranged all over the bottom side of the mechanical deck.

8-2 Basic Configuration of Mechanism

As shown in Fig. 8-1, the mechanism of VCR is configured with five main blocks, and each operation is precisely controlled by the microcomputer built in the system control section.

First, load a video cassette tape in VCR :

(1) The cassette is automatically set on the reel disc.

(2) The tape is pulled out from the cassette, and wrapped around the cylinder.

(3) The cylinder turns in a constant speed rate synchronizing with the vertical Sync. signal of video signal.

(4) The tape runs in synchronization with cylinder rotation and traces the video tracks precisely.

(5) The running tape is taken up by the reel, the tape feeding side is given with a proper tension so that tape is not slacked.

The above series of operations are performed under control of the system control section. The system control section also sends commands to each mechanism according to the operation buttons, thus the VCR is designed so that various operations such as recording, playback, special playback, FPS / RPS, and FF / REW, etc. are correctly performed.

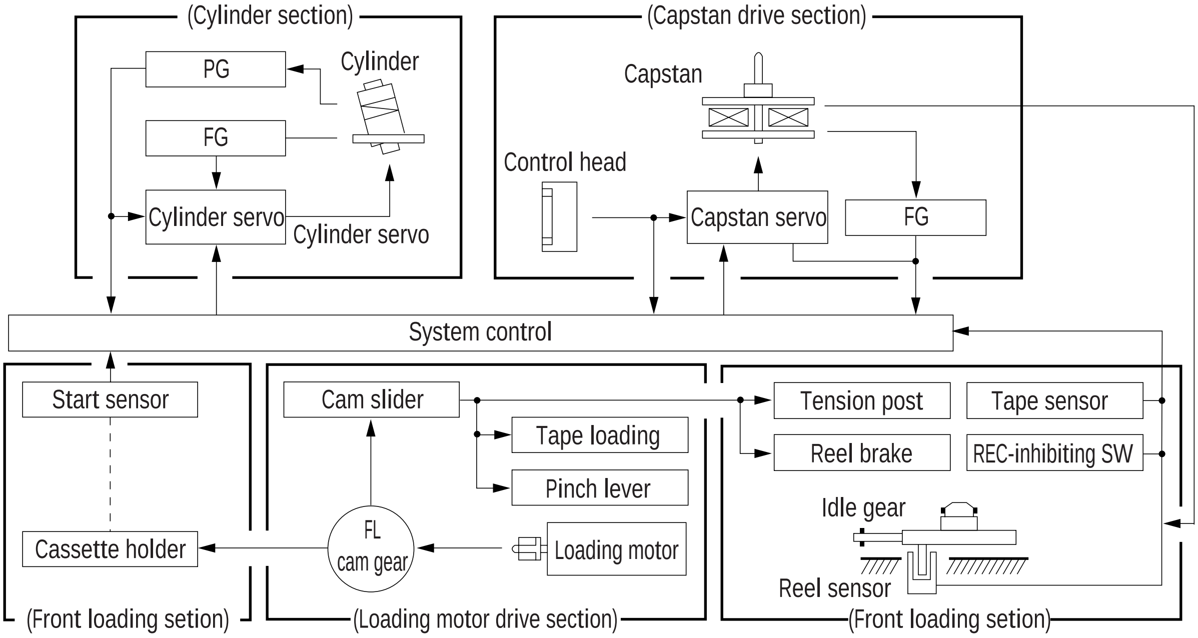

(Cylinder section)
PG
Cylinder
FG
Cylinder servo
Cylinder servo
(Capstan drive section)
Capstan
Control head
Capstan servo
FG
System control
Start sensor
Cassette holder
(Front loading setion)
Cam slider
Tape loading
Pinch lever
FL
cam gear
Loading motor
(Loading motor drive section)
Tension post
Tape sensor
Reel brake
REC-inhibiting SW
Idle gear
Reel sensor
(Front loading setion)

Fig. 8-1 Basic Configuration of Mechanism

8-3 Main Mechanism and Functions

8-3-1 Tape Path System

The tape come out from the supply reel (S) of the video cassette runs through paths shown in Figs. 8-2 and 8-3, and is taken up by the take-up (T) reel. (S stands for the supply reel, and T for the take-up reel, hereafter.)
At S reel side (tape enterance side of the cylinder) against the cylinder, a tension post to allow the tape surface to contact with each head with a proper tension which assures stable running, an FE head which erases entire data of the tape, and an S guide roller which restricts tape motion in upward / downward direction are provided.
In the same way, a T guide roller, audio head to record audio signals at upper side of the tape, control head to record and reproduce a control signal at lower side of the tape, and an audio erase head to erase only the audio signals and perform after-recording in parallel with the audio head are provided at T reel side. (tape exit side of the cylinder).
The guide parts marked with asterisks (*) are equipped with the adjusting mechanism to stabilize the tape running or to record and reproduce the signals precisely.

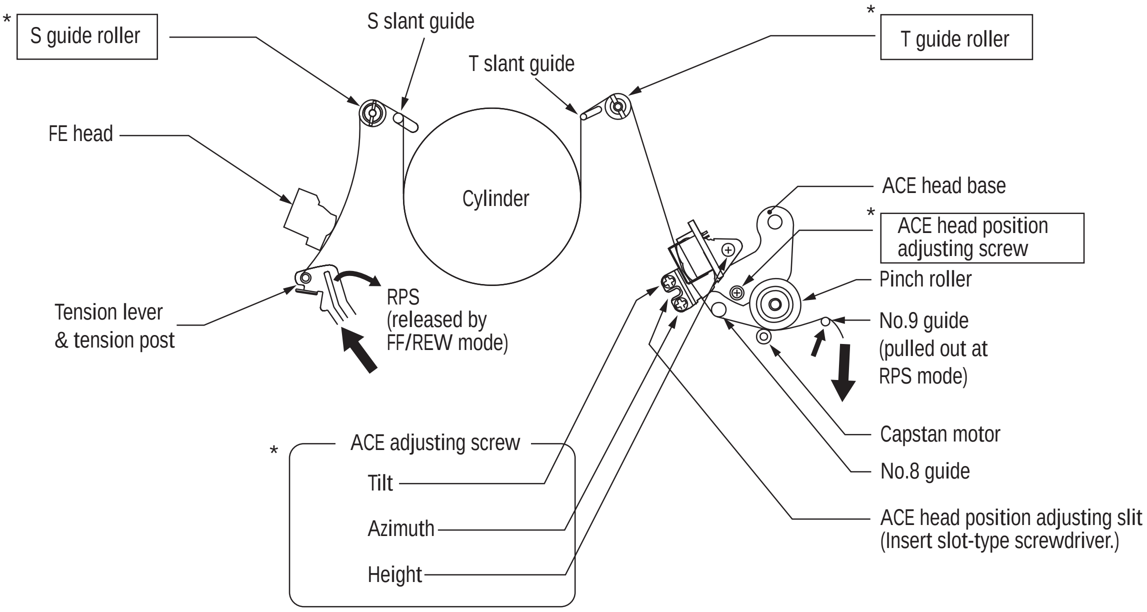
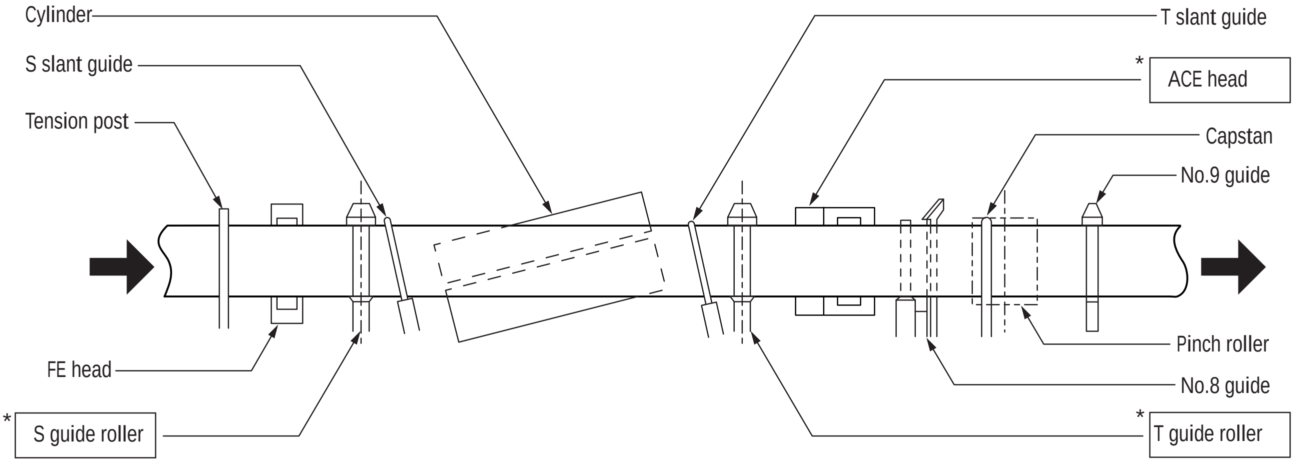

* S guide roller
S slant guide
T slant guide
* T guide roller
FE head
Cylinder
ACE head base
* ACE head position adjusting screw
Pinch roller
Tension lever & tension post
RPS (released by FF/REW mode)
No.9 guide (pulled out at RPS mode)
Capstan motor
No.8 guide
* ACE adjusting screw
Tilt
Azimuth
Height
ACE head position adjusting slit (Insert slot-type screwdriver.)

Fig. 8-2 Tape Path System


Cylinder
S slant guide
Tension post
FE head
* S guide roller
T slant guide
* ACE head
Capstan
No.9 guide
Pinch roller
No.8 guide
* T guide roller

* ☐ show the locations to be adjusted.

Fig. 8-3 Guide Path System

8-3-2 Reel Drive System

The reel drive system consists of a capstan motor as a drive power source, belt as a power transmission mechanism, clutch mechanism, idle gears, and a reel disc. Selecting of forward rotation or reverse rotation is carried out by an idle gear which changes its rotating direction according to rotating direction of the clutch holder.
Reel take-up torque is selected according to an operation mode.
In the record, playback, fps, rps modes, the reel take-up torque is controlled by the clutch mechanism, thereby the tape fed by the capstan is taken up with a proper torque.
In the FF and REW modes, the clutch enters a direct connecting status in which the clutch mechanism does not operate and the capstan drive torque is transmitted without reduction, so a high speed taking-up is enabled.

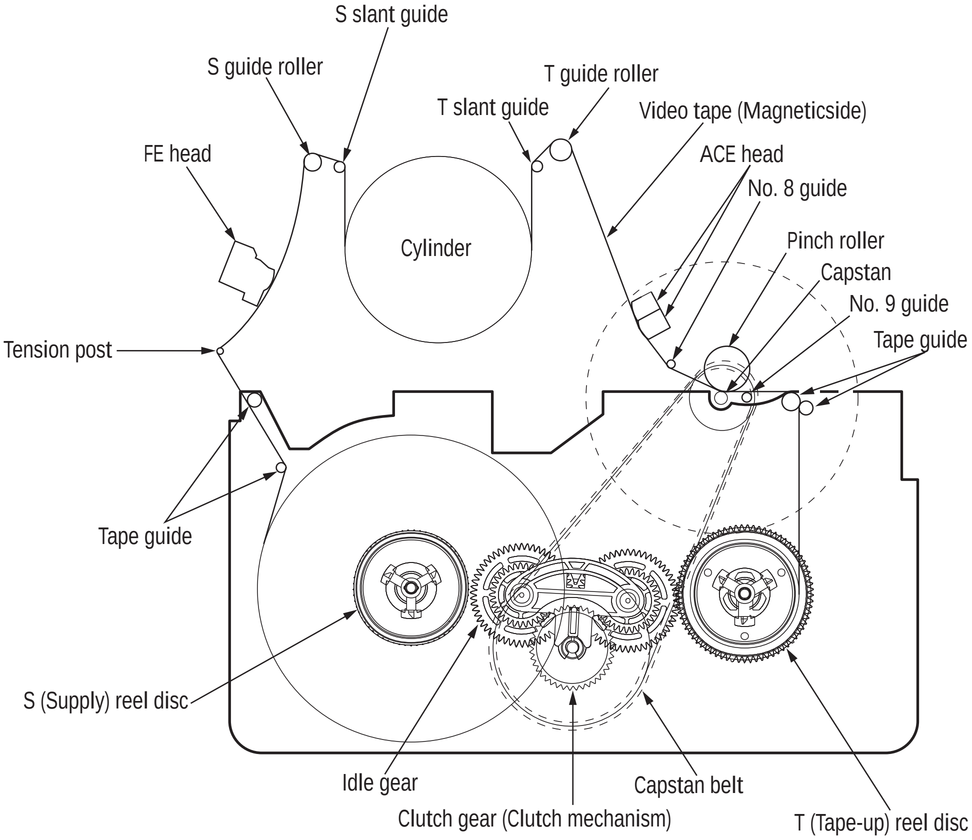

S slant guide
S guide roller
T guide roller
T slant guide
Video tape (Magneticside)
FE head
ACE head
No. 8 guide
Cylinder
Pinch roller
Capstan
No. 9 guide
Tape guide
Tension post
Tape guide
S (Supply) reel disc
Idle gear
Capstan belt
Clutch gear (Clutch mechanism)
T (Tape-up) reel disc

Fig. 8-4 Reel Drive System

8-4 Basis of the Mechanism

8-4-1 Front Loading

(1) When a video cassette is inserted into the cassette holder and pushed furthermore, FL arm lever is rotated by motion of the cassette holder. The rotation of FL arm lever makes the horizontal moving of FL drive slider.
(2) When the information of Start Sensor OFF is transmitted to the microcomputer, the loading motor starts to rotate.
(3) The rotation is transmitted in a sequence shown below :
Loading motor - worm gear - worm wheel -
FL Cam Gear - FL Drive Slider - FL Arm Lever -
Cassette Holder
(4) The video cassette is horizontally moved.
(5) The cassette tape is vertically moved.
In this case, the cassette lid is opened.
(6) The cassette tape is set on the reel disc, and loading operation completes.
(7) The cassette tape is loaded.
(8) The status becomes full loading.
(9) When the cassette is out, the reverse steps of the above procedure are carried out.

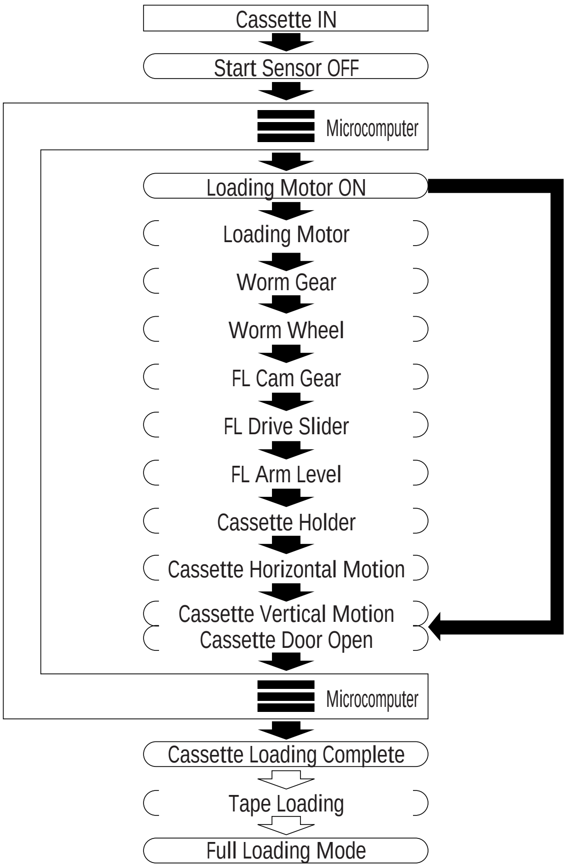

Cassette IN
Start Sensor OFF
Microcomputer
Loading Motor ON
Loading Motor
Worm Gear
Worm Wheel
FL Cam Gear
FL Drive Slider
FL Arm Level
Cassette Holder
Cassette Horizontal Motion
Cassette Vertical Motion
Cassette Door Open
Microcomputer
Cassette Loading Complete
Tape Loading
Full Loading Mode

Fig. 8-5

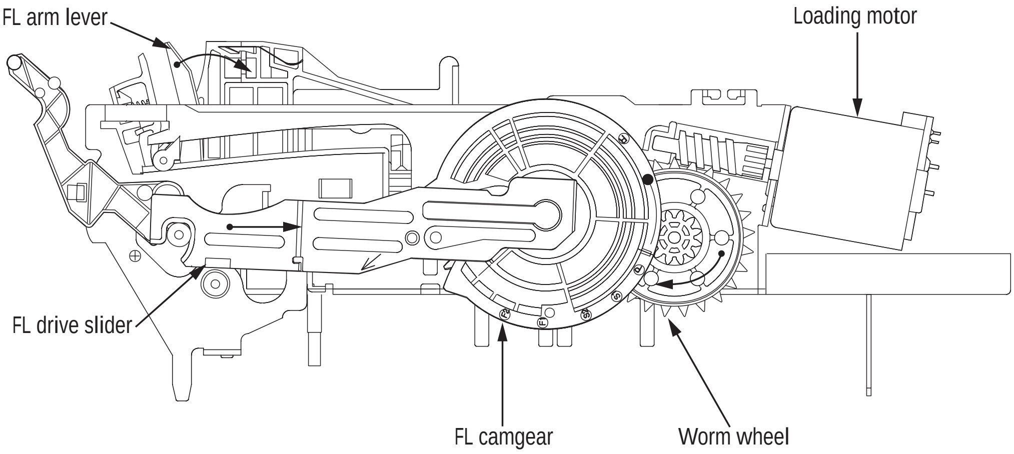

FL arm lever
Loading motor
FL drive slider
FL camgear
Worm wheel

Fig. 8-6 Drive Transmission Path

8-4-2 Cassette loading/unloading Modes

When a cassette is entered in the VCR, the cassette is set on the reel disc by the front loading mechanism.
In this case, the tension post, loading tape guide, capstan motor, and the No.9 guide are positioned inside of the tape in the cassette case.

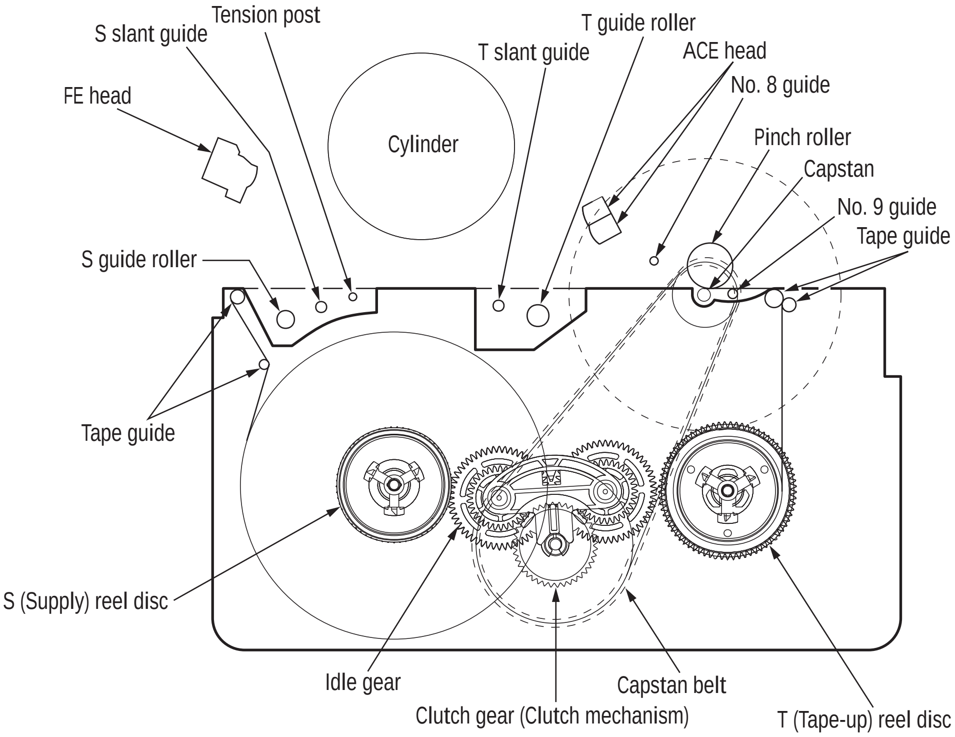

Tension post
S slant guide
FE head
Cylinder
T guide roller
T slant guide
ACE head
No. 8 guide
Pinch roller
Capstan
No. 9 guide
Tape guide
S guide roller
Tape guide
S (Supply) reel disc
Idle gear
Capstan belt
Clutch gear (Clutch mechanism)
T (Tape-up) reel disc

Fig. 8-7 Cassette IN/OUT Mode

8-4-3 Tape Loading

A full loading system is employed.
In the full loading system, the tape loading starts at the same time when the cassette loading operation has completed and cassette has been mounted, and the tape is pulled out, wrapped around the cylinder and the mechanism enters the stop status under this condition.

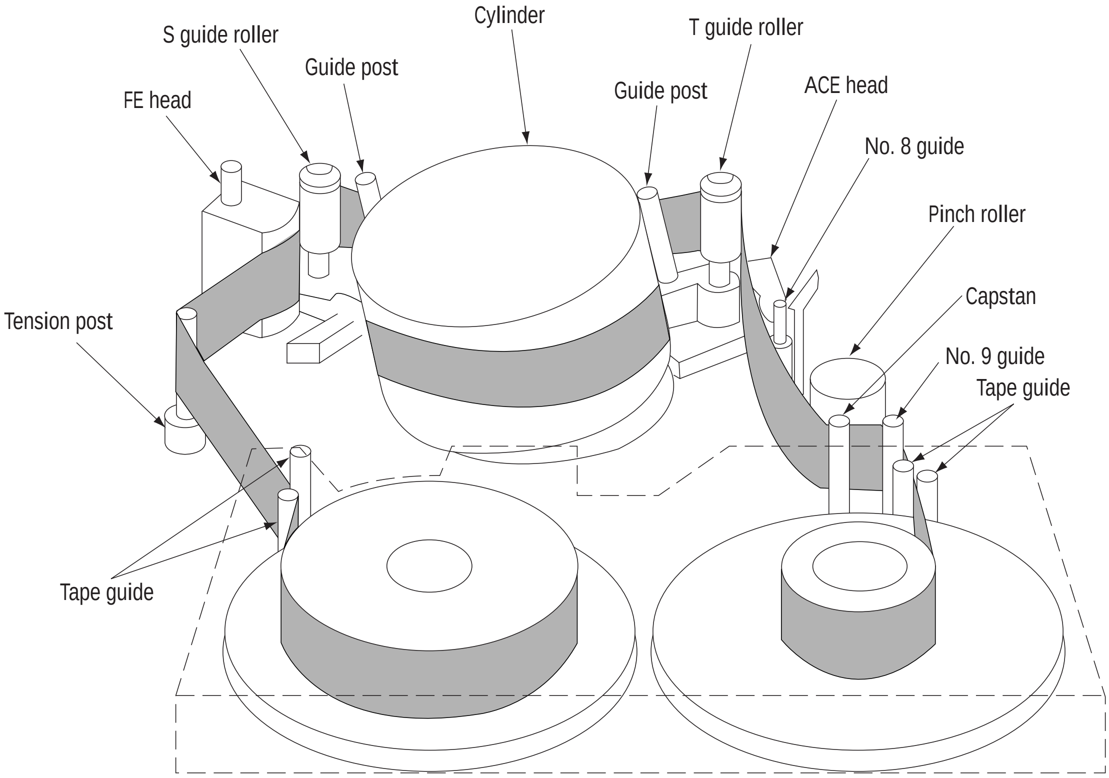

Cylinder
S guide roller
T guide roller
Guide post
FE head
Guide post
ACE head
No. 8 guide
Pinch roller
Capstan
Tension post
No. 9 guide
Tape guide
Tape guide

Fig. 8-8 Tape Loading

8-4-4 Playback Standby Mode

In the full loading system, the tape loading starts at the same time when the cassette mounting has completed, the mechanism shifts to the playback position, and enters the standby status with keeping tape wrapped around the cylinder.
In this case, tape tension applied to the cylinder is decreased to protect the tape and to prevent the tape from scratches.

8-4-5 FF/REW Modes

The reels enter a free status by rotating the loading motor to go to FF / REW position.
In this case, the capstan motor rotates in colck-wise direction in the REW mode. The idle gear is swung rightward or leftward according to the rotating direction of the capstan motor. As a result, the T reel rotates in the FF mode or the S reel rotates in the REW mode, thus taking up the tape to the rotating reel.

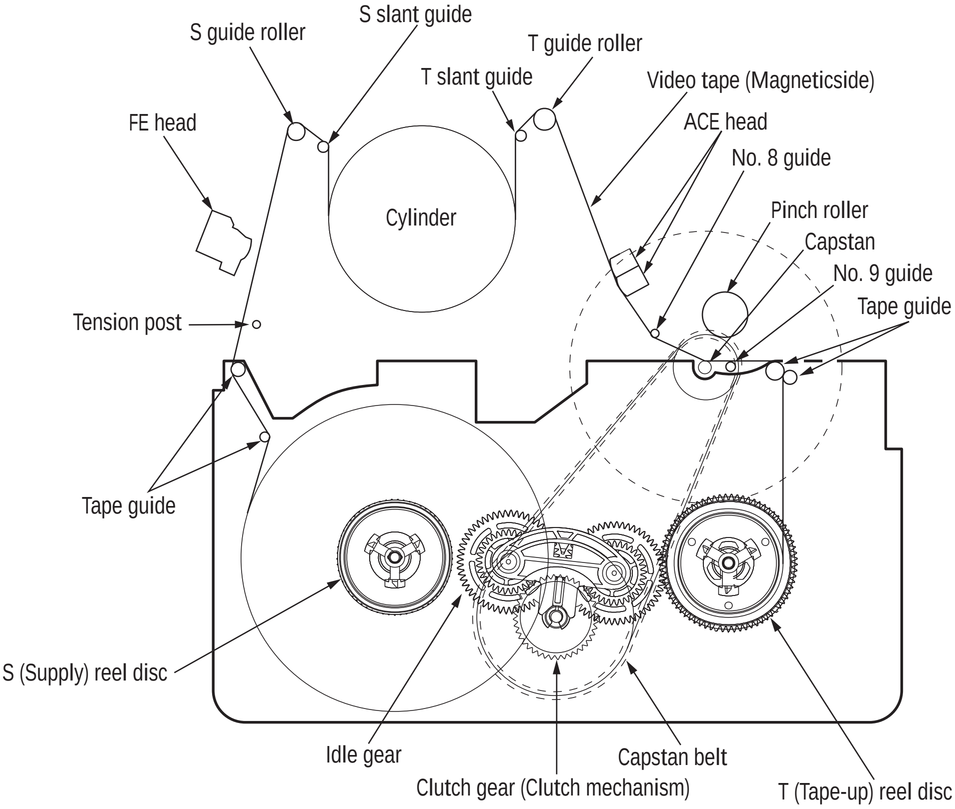

S slant guide
S guide roller
T guide roller
T slant guide
Video tape (Magneticside)
FE head
ACE head
No. 8 guide
Cylinder
Pinch roller
Capstan
No. 9 guide
Tape guide
Tension post
Tape guide
S (Supply) reel disc
Idle gear
Capstan belt
Clutch gear (Clutch mechanism)
T (Tape-up) reel disc

Fig. 8-9 FF/REW Mode

8-4-6 Record/Playback Modes

When the record or playback button is pressed, the tape is fed by the rotation of the capstan motor.
In this case, a tension post touches the tape and braking froces created by the band brake linked with the tension post is applied to the S reel, thereby stabilizing the tape tension. The tape fed by the capstan is taken up around the T reel. The T reel is driven with a constant torque generated by transmitting rotation of the capstan motor to the clutch mechanism.

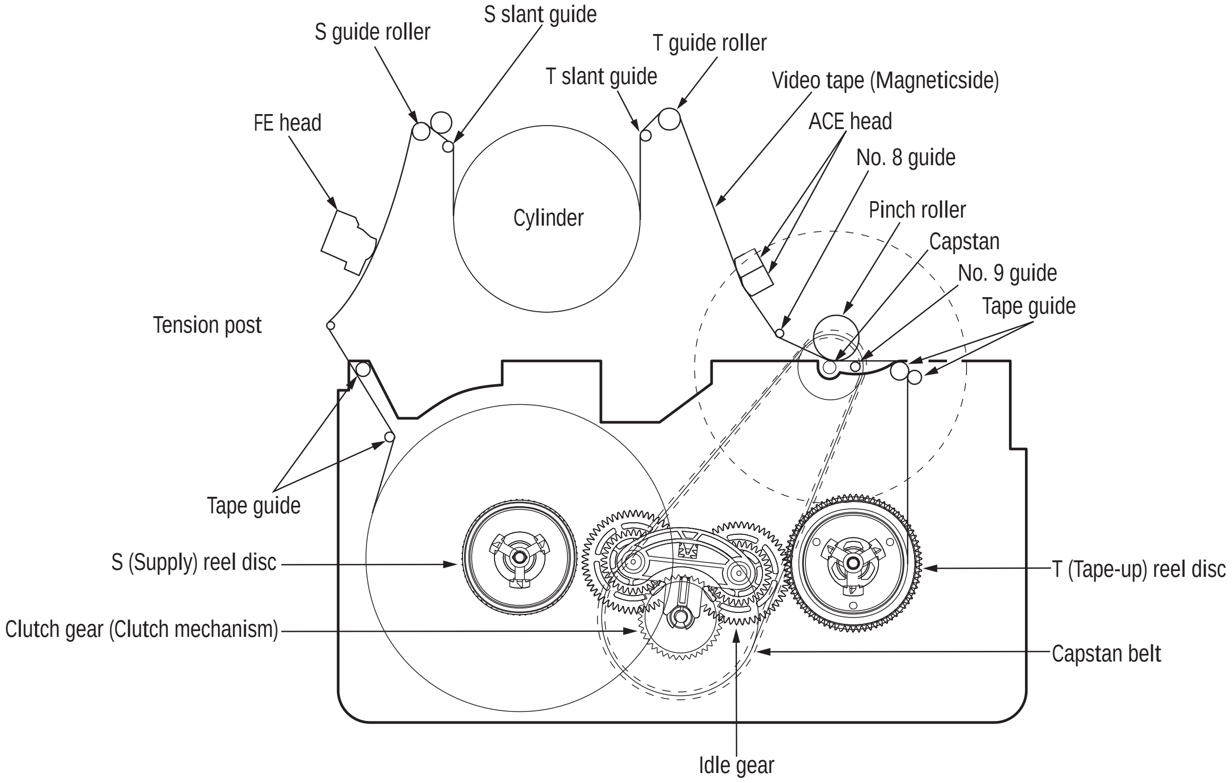

S slant guide
S guide roller
T guide roller
T slant guide
Video tape (Magneticside)
FE head
ACE head
No. 8 guide
Cylinder
Pinch roller
Capstan
No. 9 guide
Tape guide
Tension post
Tape guide
S (Supply) reel disc
T (Tape-up) reel disc
Clutch gear (Clutch mechanism)
Capstan belt
Idle gear

Fig. 8-10 Record/Playback Mode

8-5 System Control

In the VCR, complex mechanism, video, audio, servo circuits, etc. must be operated in specified timings matched each other. The system control circuit performs entire controls for the VCR.
An automatic stop function is also provided to protect important tape if a trouble occurs on the complex mechanism and the electrical circuits.
For this purpose, status of each part of the mechanism is always monitored with various sensor switches, and the microcomputer controls collectively the unit so that the best condition is kept.
Moreover, the microcomputer controls signal switchings for each circuit according to the mechanism status.

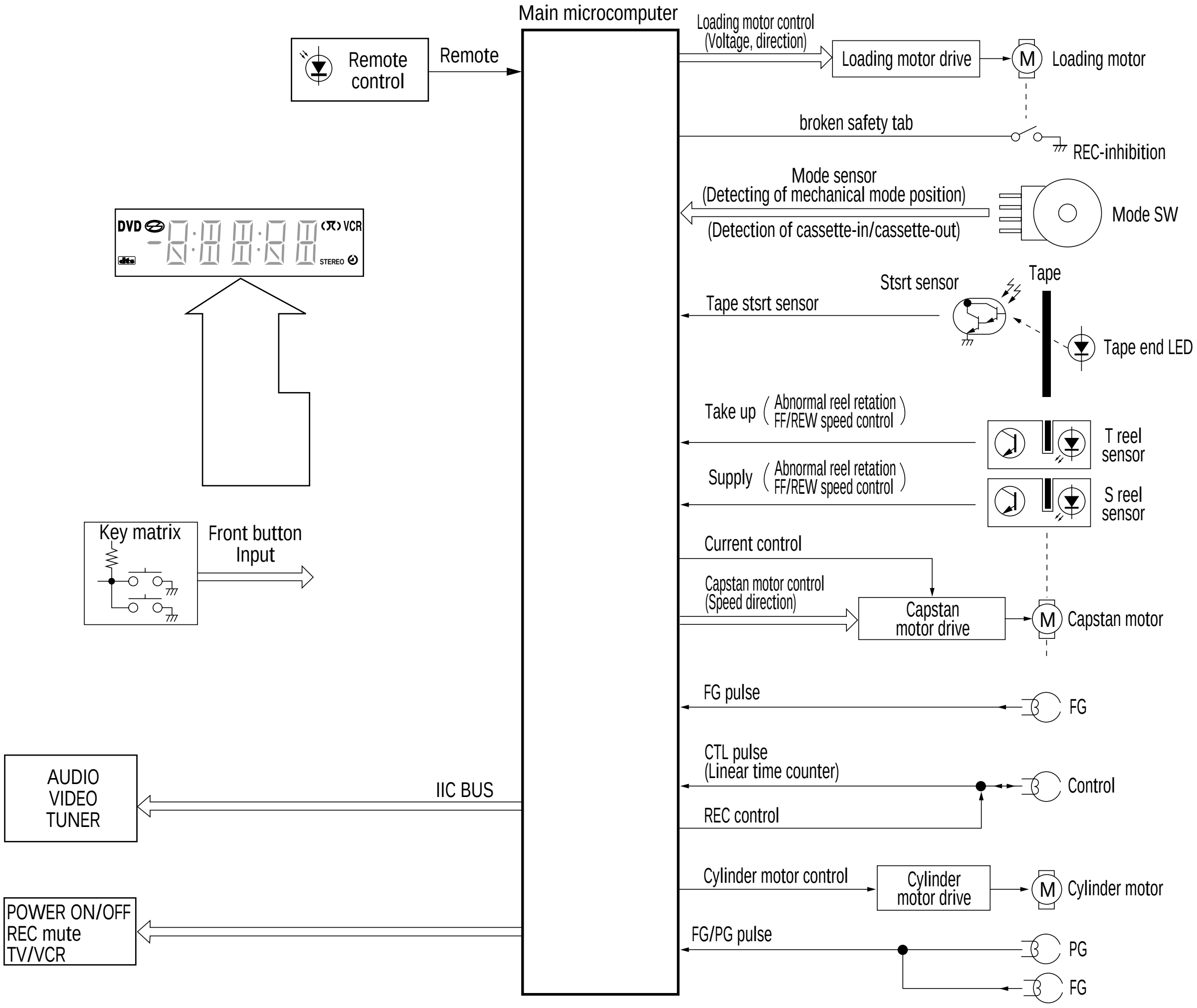

Main microcomputer
Remote control
Remote
Loading motor control
(Voltage, direction)
Loading motor drive
M
Loading motor
broken safety tab
REC-inhibition
Mode sensor
(Detecting of mechanical mode position)
(Detection of cassette-in/cassette-out)
Mode SW
DVD
VCR
STEREO
Stsrt sensor
Tape
Tape stsrt sensor
Tape end LED
Take up (Abnormal reel retation FF/REW speed control)
T reel sensor
Supply (Abnormal reel retation FF/REW speed control)
S reel sensor
Key matrix
Front button Input
Current control
Capstan motor control
(Speed direction)
Capstan motor drive
M
Capstan motor
FG pulse
FG
CTL pulse
(Linear time counter)
Control
REC control
IIC BUS
AUDIO
VIDEO
TUNER
Cylinder motor control
Cylinder motor drive
M
Cylinder motor
FG/PG pulse
PG
FG
POWER ON/OFF
REC mute
TV/VCR

Fig. 8-11 System Control Block Diagram

8-6 System Control and Mechanical Operations

8-6-1 Mechanical Operation

The operation of mechanism is performed by rotation of the loading motor, and the transmission path of the operation is as shown in Fig. 8-12.

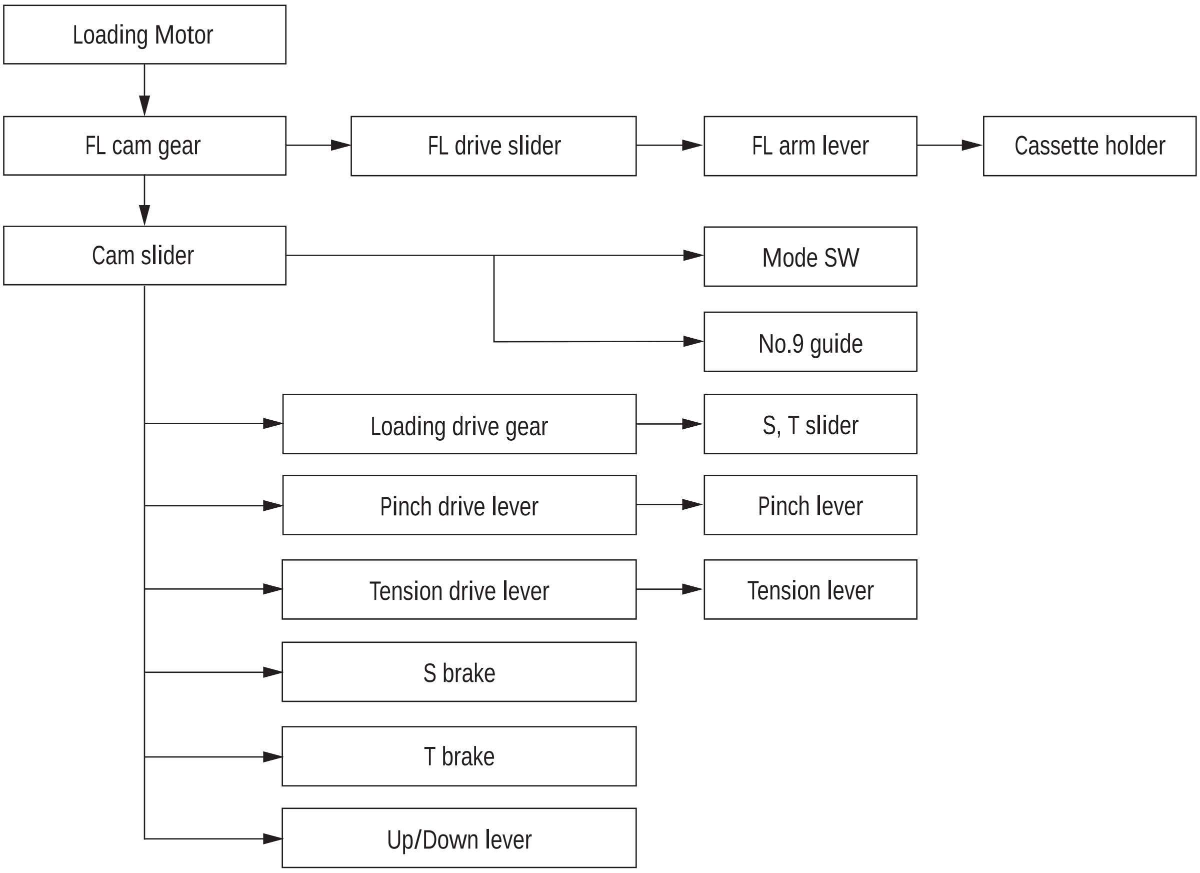
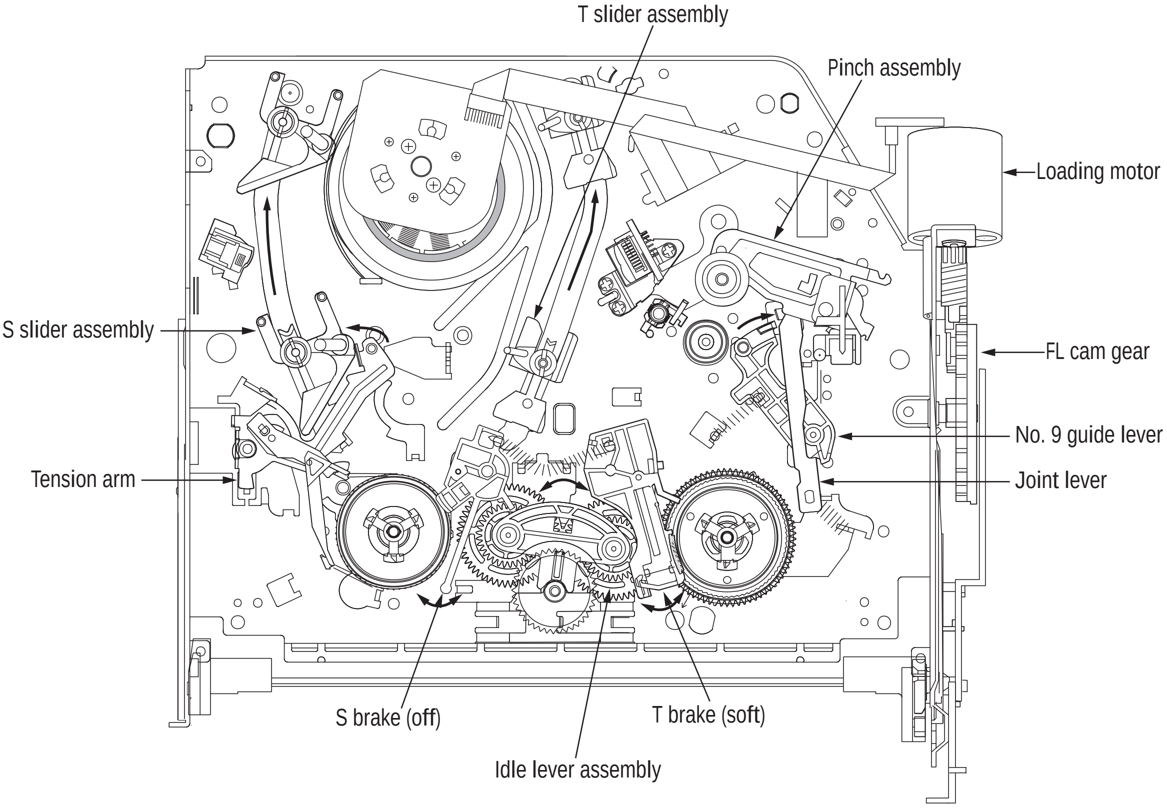

Loading Motor
FL cam gear
FL drive slider
FL arm lever
Cassette holder
Cam slider
Mode SW
No.9 guide
Loading drive gear
S, T slider
Pinch drive lever
Pinch lever
Tension drive lever
Tension lever
S brake
T brake
Up/Down lever

Fig. 8-12 Transmission Path of Operation

Fig. 8-14 shows each mode and mechanism status in each mode concerned with the rotation of the FL cam gear or cam slider shift. The mechanism operates as shown in Fig. 8-13 according to the timing chart in Fig. 8-14.

Note :
The Start Sensor is actuated by the horizontal moving of Slider FL Drive and turned on or off by insertion or ejection of a cassette.

<Top View>


T slider assembly
Pinch assembly
Loading motor
FL cam gear
S slider assembly
No. 9 guide lever
Tension arm
Joint lever
S brake (off)
T brake (soft)
Idle lever assembly

<Bottom View>

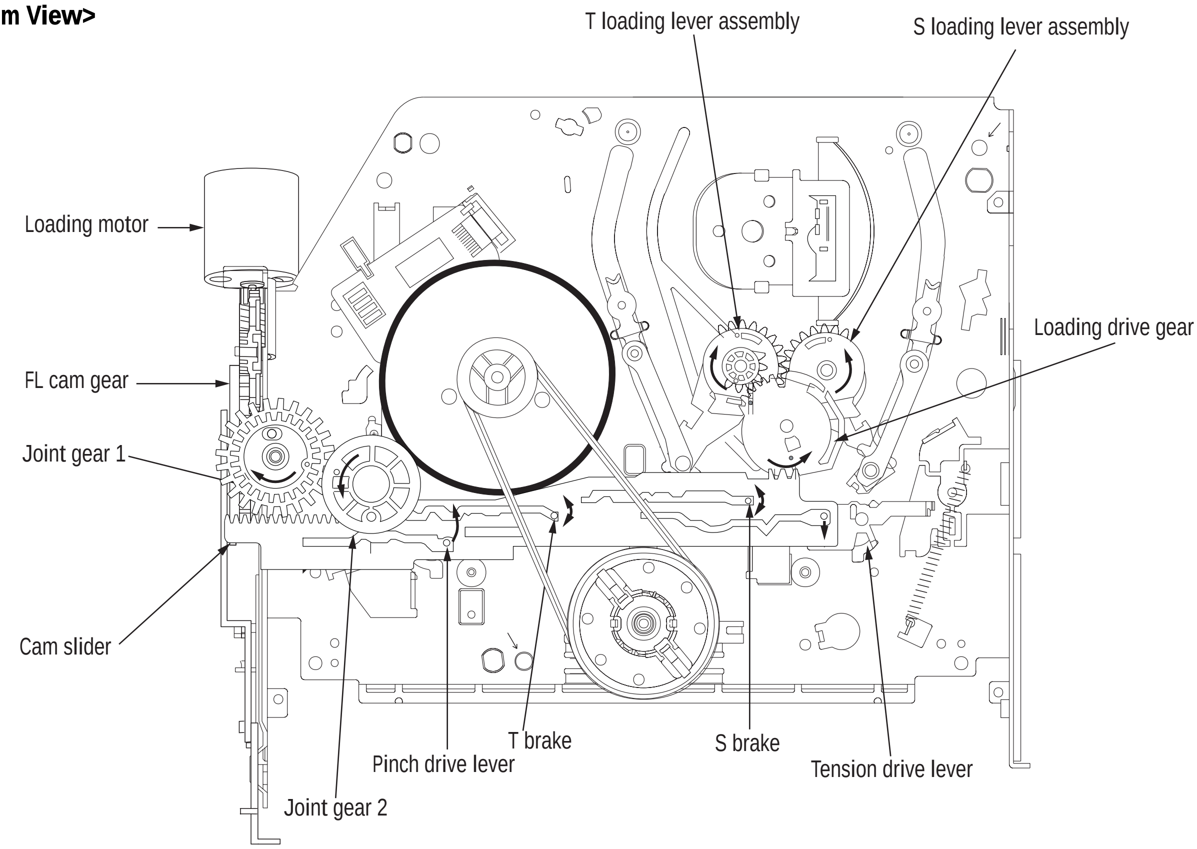

T loading lever assembly
S loading lever assembly
Loading motor
Loading drive gear
FL cam gear
Joint gear 1
Cam slider
T brake
S brake
Pinch drive lever
Tension drive lever
Joint gear 2

Fig. 8-13 Mechanical Operation

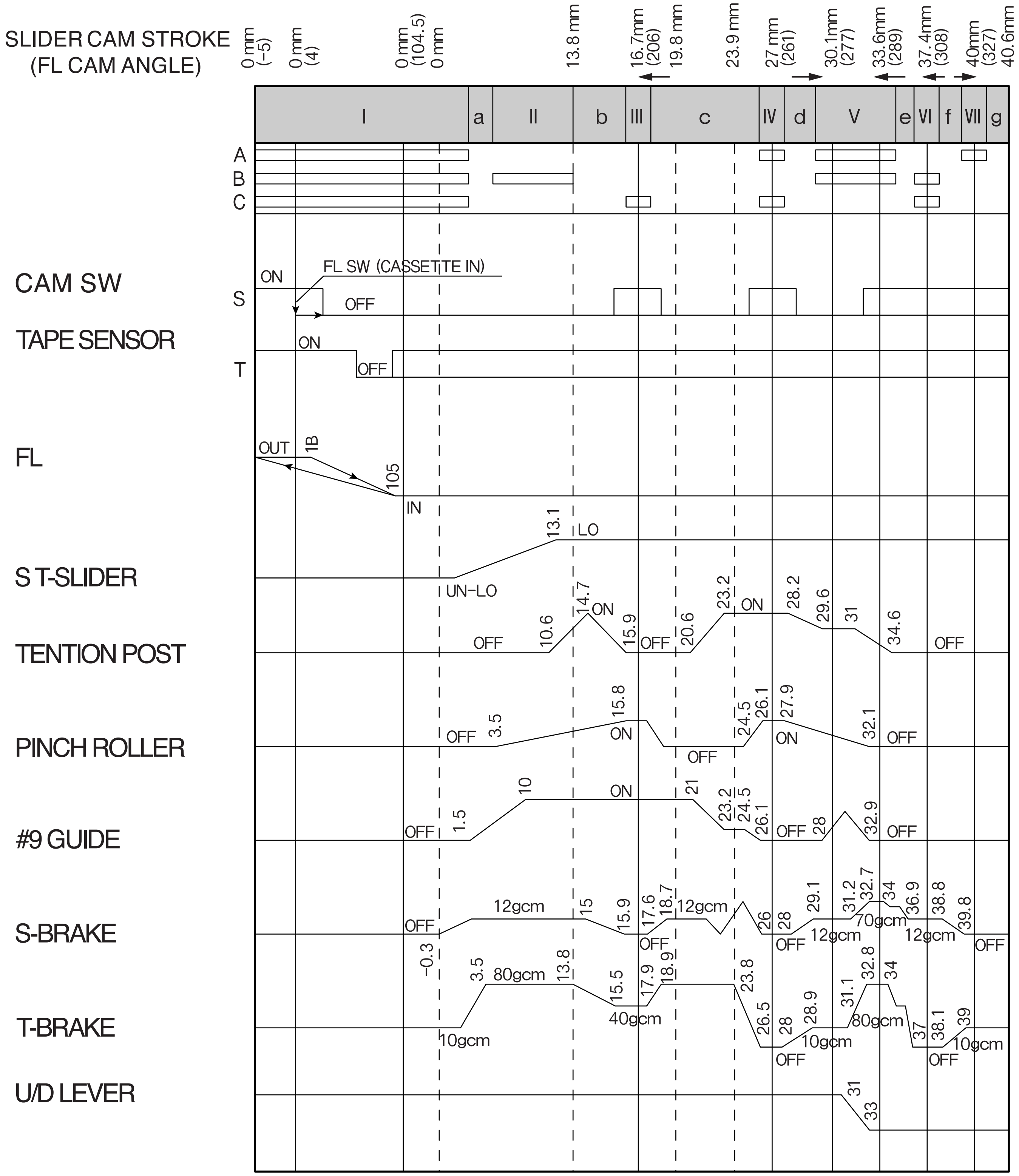


Fig. 8-14 Mecha Timing Chart

(1) There are two STOP modes and two FF/REW modes.

1) STOP 1

This mode is performed when PB and FF/REW is not done for 5 miniute at power on.
The small load is given to S REEL DISC and T REEL DISC. And the cylinder motor is stopped.

2) STOP 2

This mode is performed when you press the stop button as performing FF/REW.
The large load is given to S REEL DISC and T REEL DISC.

3) FF/REW 1

This mode is performed when

❶ The tape load is small during performing FF and reducing speed.

❷ The tape load is large during performing REW.

The small load is given to S REEL DISK and no load is given to T REEL DISC.

4) FF/REW 2

This mode is performed when

❶ The tape load is large during performing FF.

❷ The tape load is small during performing REW and reducing speed

No load is given to S REEL DISK and the small load is given to T REEL DISK.

(Cf) According to acceleration, deceleration, and the location of tape, tension control which is caused by converting FF/REW 1 and FF/REW 2 each other is performed during FF or REW.

(2) The condition of S Brake and T Brake at each mode.

< S BRAKE>

1) OFF BRAKE (Unloading completion, RPS, PLAY, FF/REW 2)

- S BRAKE is detached from S REEL DISC completely. So S REEL DISC is free.

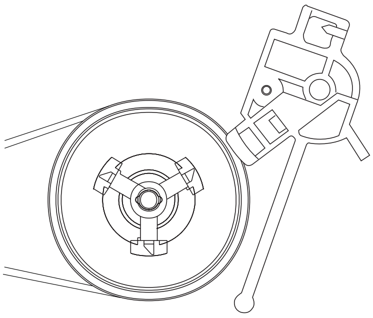


Fig. 8-15

2) SOFT BRAKE(during LOADING, STOP 1, FF/REW 1)

- The small load is given to S REEL DISC.

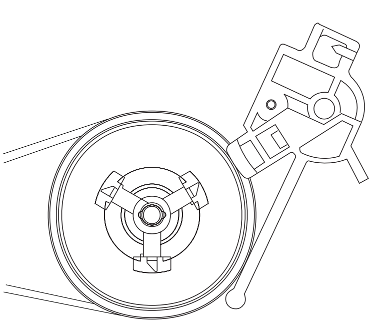


Fig. 8-16

3) MAIN BRAKE (STOP 2)
- The large load is given to S REEL DISC.

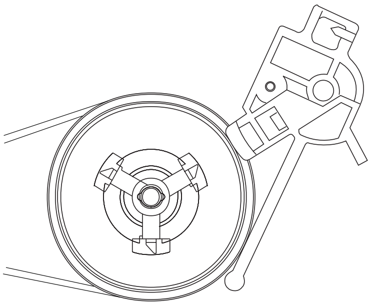


Fig. 8-17

< T BRAKE>

1) OFF BRAKE (PLAY, FF / REW 1)
- T BRAKE is detached from T REEL DISC completely. So T REEL DISC is free.

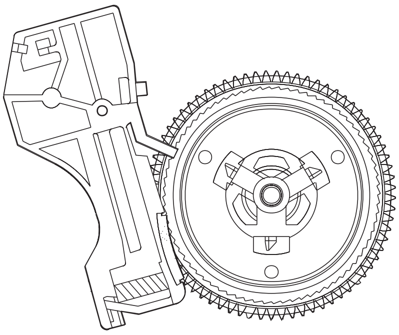


Fig. 8-18

2) SOFT BRAKE (UNLOADING Completion ,STOP 1, FF / REW 2)
- The small load is given to T REEL DISC.

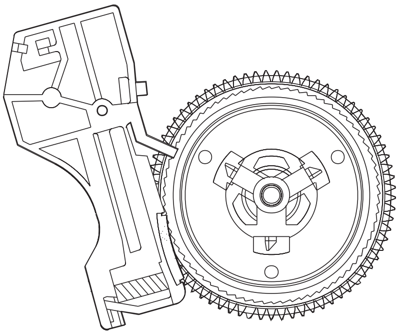


Fig. 8-19

3) REVERSE SEARCH BRAKE (RPS)

- The medium load is given to T REEL DISC.

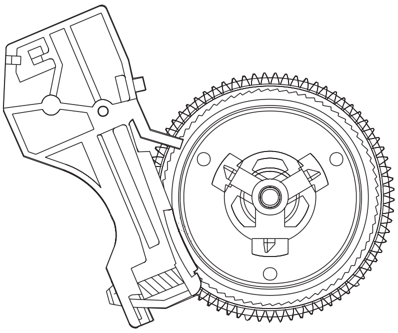


Fig. 8-20

4) MAIN BRAKE (on the loading, STOP 2)

- The large load is given to T REEL

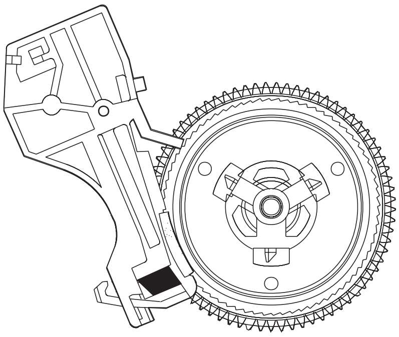


Fig. 8-21

8-6-2 Mode Sensor Drive

The mode sensor converts each mode of the mechanism into an electrical signal and transmits it to the microcomputer. The FL cam gear is rotated by the loading motor, and the cam slider slides after operation of the cassette holder.
Then the mode switch also rotates synchronized with the cam slider and outputs a signal corresponding to each mode. This signal is transmitted to the microcomputer and the microcomputer stops the cam slider at a specified angle, thus establishing each mode.
The IC601 controls Capstan Motor Drive IC for each mode to make the loading motor rotate in forward or reverse direction, thereby setting the mechanism at a specified position.
The mode switch develops three outputs A, B and C.
The circuit configuration of the mode sensor drive is shown in Fig. 8-22.

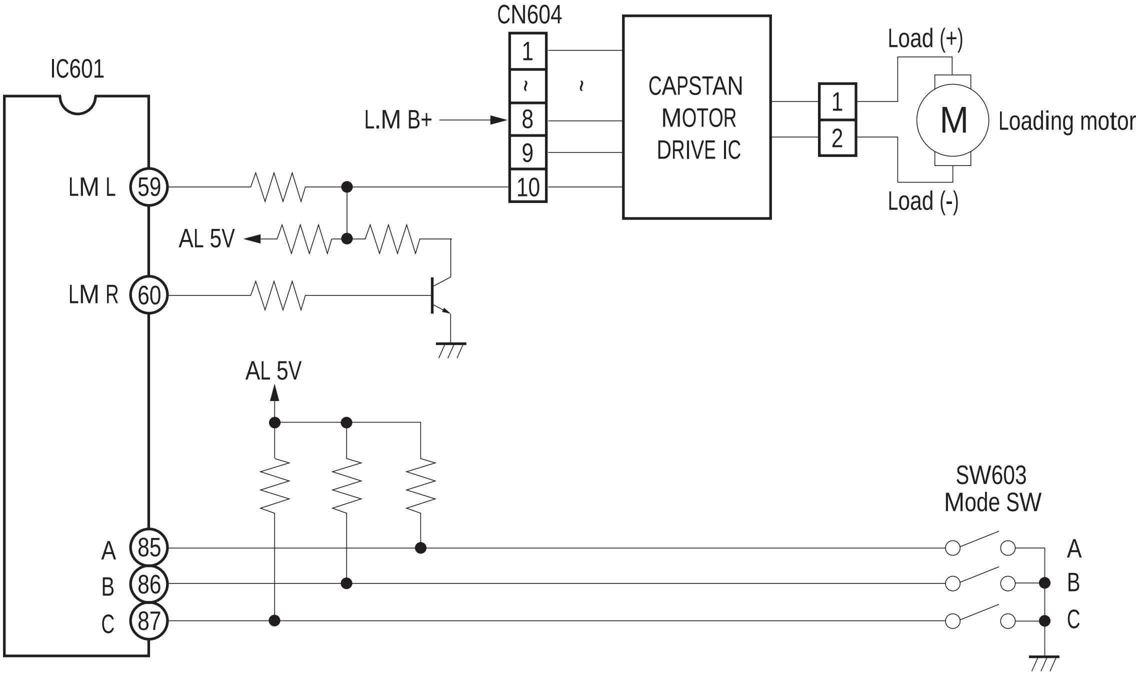

CN604
IC601
1
~
8
9
10
L.M B+
CAPSTAN MOTOR DRIVE IC
Load (+)
Load (-)
1
2
M
Loading motor
LM L
59
LM R
60
AL 5V
AL 5V
SW603
Mode SW
A
85
B
86
C
87
A
B
C

Fig. 8-22 Mode Sensor Drive

8-6-3 Operations in Each Mode

[1] Cassette loading & Tape loading mode

<Cassette loading>

(1) The FL cam gear is in the Cassette unloading (position I)position, and the cassette holder is in the out status (start sensor ON). Under this condition, each motor is stopped.

(2) Status of the mechanism is as follows.

1) S.T guide rollers, tension post, No.9 guide are in unloading status and housed in the reel disc side.

2) S brake is released and T brake is in soft brake status.

3) The clutch holder assembly is in clutched status and idle lever assembly is enabled to be engaged with both S and T reel discs.

(3) When a cassette is inserted, the lock lever of cassette holder is released from the stopper, the cassette holder moves, the FL arm lever rotates, and the FL Drive Slider slides, thereby closing the start sensor.

(4) IC601 controls Capstan Motor Drive IC to rotate the loading motor in forward direction, and move the cassette holder. At the same time, the capstan motor rotates in the reverse direction and moves the cassette down (vertical motion) while rotating the S reel disc.

(5) The cassette lid opens when the vertical motion starts.

(6) When the vertical motion has completed and the cassette is mounted, the capstan motor rotates in the reverse direction. At that time the position “a” is detected with the cam slider shifted and the loading / capstan motors are stopped. After 300msec the loading motor rotates in the forward direction and enters the tape loading operation.

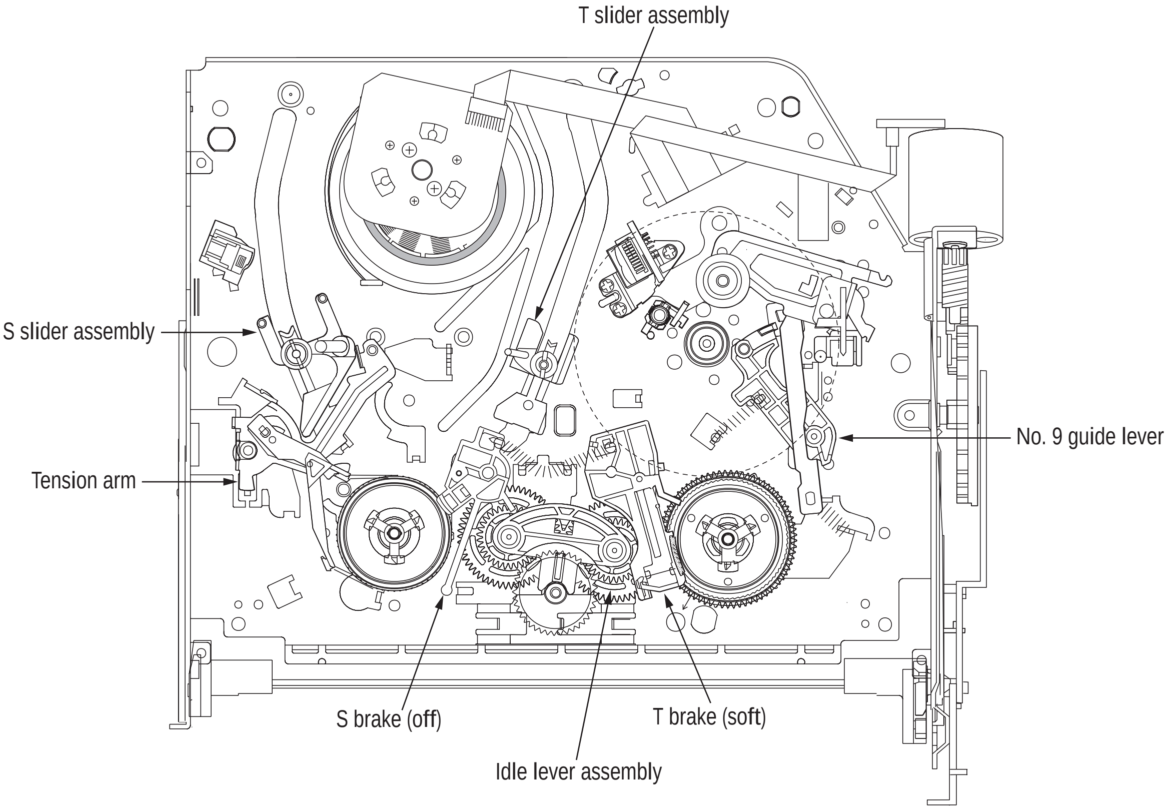


Fig. 8-23 Cassette-Loading Mode (Position I)

<Tape loading>

(1) After slot-in operation (cassette loading), FL cam gear rotates and the cam slider starts shifting, and a loading gear is ready to start.
Under this condition, the mechanism status is as follows :
1) The T main brake actuates so that tape does not com out from the T reel during the loading operation.
(2) The cylinder starts to rotates after the loading motor is rotated.
(3) When the cam slider reaches the position II (loading / unloading modes), the mechanism enters the loading status and operates as described below.
1) S,T sliders are moved through the loading drive gear and trun on the tension post.
2) The No. 9 guide is loaded.
3) The pinch roller is loaded up to front of the capstan.
4) The head cleaner is actuated during loading operation.
5) The S soft brake is actuated.
(4) When the cam slider passes through the position III, and detects the position IV (playback standby mode), the loading motor stops. Under this condition, the mechanism status is described as below :
➊ The pinch roller is pressed to the capstan.
➋ The No.9 guide is stored in the cassette.
➌ The tension post touches the tape, band brake force is applied, and the tension servo brake mechanism actuates.
➍ Brakes for the reel discs are all off.

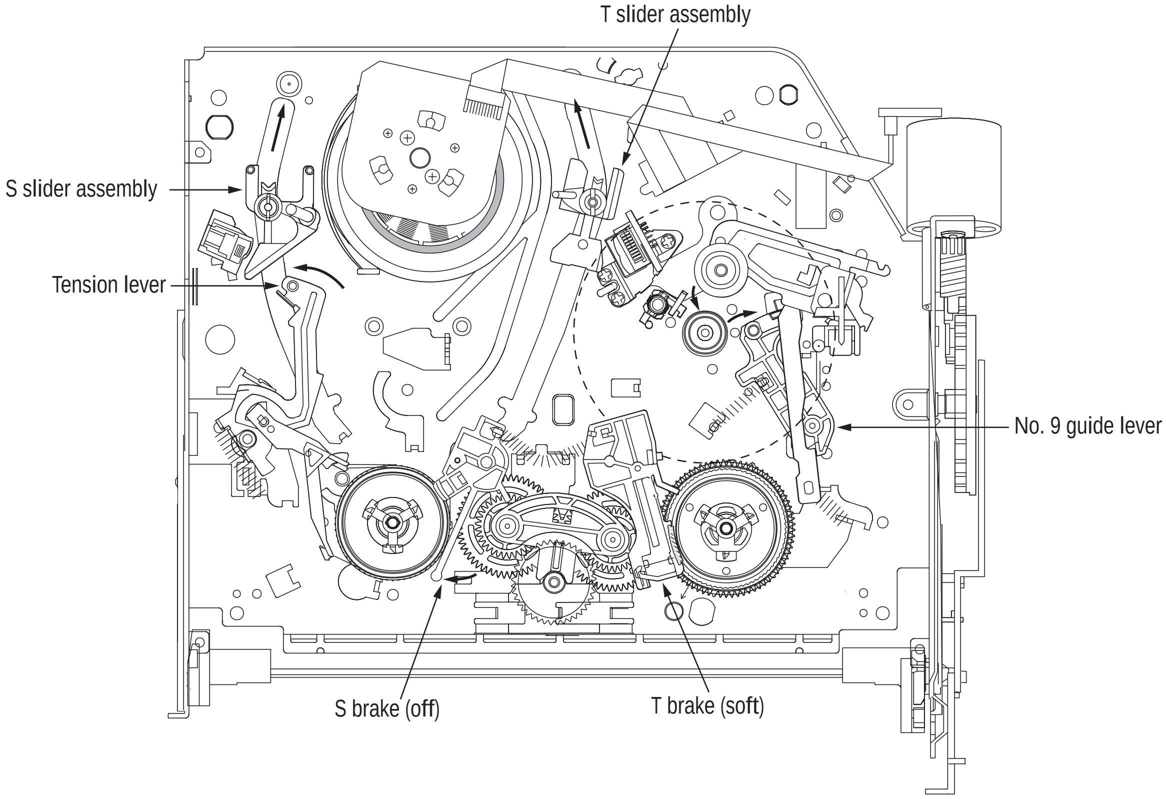


Fig. 8-24 Tape Loading Operation (Position II)

<Playback Stand-by (Stop) mode>

(1) The tape loading operation completes and the loading motor stops.
(2) In the same way as in the playback mode, the capstan motor rotates in forward direction and the T reel disc takes up the tape. (For more details, refer to the playback mode.)
(3) After running the tape for 0.6s, the mechanism rotates the capstan in the reverse direction for 0.3s to slack the tape properly with pinch roller pressed.
(4) If nothing is operated for about 5 minutes, the loading motor rotates in the forward direction and the cam position reaches the position V, and both the loading motor and the cylinder motor stop.
(5) During this period, the video and audio systems are in the same status as in the stop mode.

[2] Tape unloading & Cassette unloading

<Tape Unloading>

(1) When the [EJECT] button is pressed in the stop mode, the mechanism enters the eject mode.
(2) IC601 controls cylinder motor drive IC to make the cylinder motor rotates.
(3) IC601 makes the loading motor rotate in the reverse direction, and shifts the cam slider.
    1) The mechanism components move in the reverse direction against the loading operation.
(4) When the cam slider reaches the position II, IC601 makes the capstan motor rotate in the reverse direction (LP X11) and takes up the tape at a specified torque using the clutch mechanism.
(5) When the cam slider reaches the position I, it brakes the capstan motor to stop, and then stops the loading motor after 230ms passed.

<Cassette unloading>

(1) Furthermore, IC601 makes the loading motor rotate in the reverse direction and also the capstan motor in reverse direction, applies braking force to the capstan motor by detecting the tape start sensor OFF --> ON, and the capstan motor stops.
(2) IC601 makes the loading motor stop after 150ms passed from sensing “ON”.
(3) Also IC601 makes the loading motor rotate in the forward direction after 120ms passed.

[3] Stop mode

(1) The cam slider is in the stop mode (position V) and each motor stops.

(2) The mechanism status is as follows :

1) The S, T guide rollers are in the loading status.
2) The pinch roller is kept away from the capstan.
3) The tension post is shifted to the reel disc side. That is, the band brake is released from the ON status and the back tension is also released.
4) The S, T soft brakes are being applied.

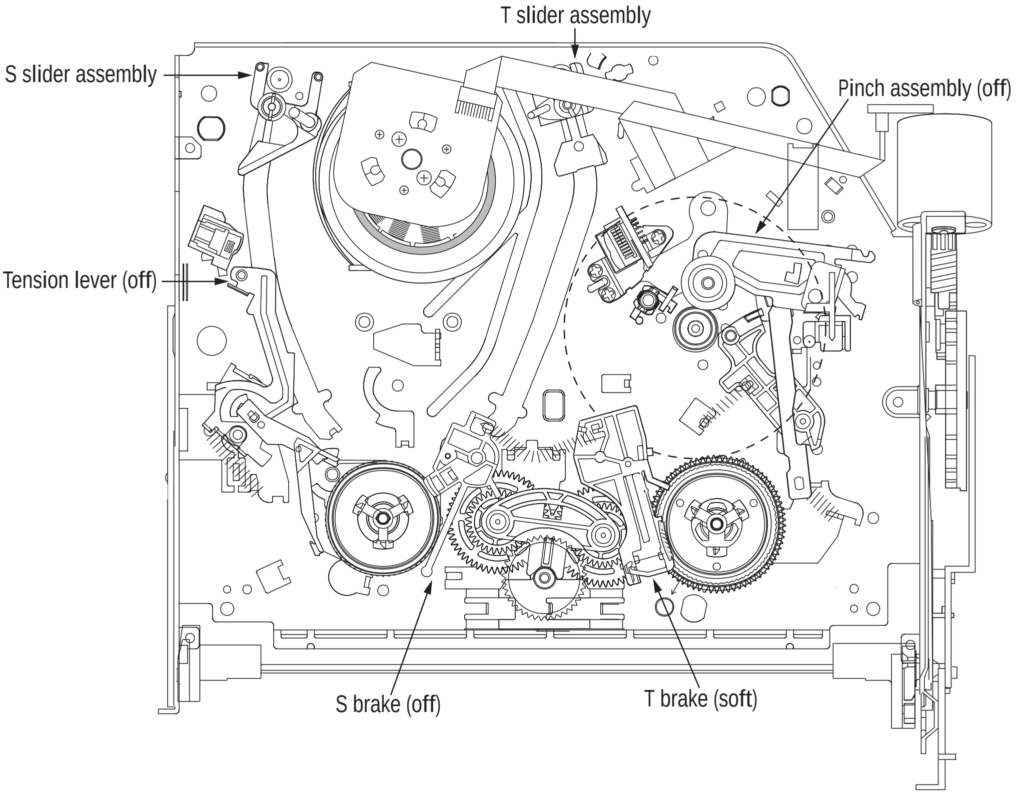

T slider assembly
S slider assembly
Pinch assembly (off)
Tension lever (off)
S brake (off)
T brake (soft)

Fig. 8-25 Stop Mode (Position V)

[4] FF/REW mode

(1) When the [REW] button is pressed in playback standby mode, the mode enters the FF/REW mode.

(2) IC601 controls Capstan Motor Drive IC and makes the loading motor rotate in the forward direction.
The loading motor stops when the cam position reaches the position VI, VII (FF/REW mode).
The mechanism status is as follows :

1) The pinch roller is OFF.
2) The No. 9 guide is once loaded but immediately returned.
3) The tension post is moved to the reel disc side. That is, the band brake is released from the ON status and the back tension is released.
4) The clutch holder assembly is in the direct status and the capstan driving force is directly transmitted to the reel disc.
5) Brakes for the reel discs are as follows :
   ❶ VI position FF/REW 1 mode (S Brake : soft brake, T Brake : off)
   ❷ VII position FF/REW 2 mode (S Brake : off, T Brake : soft brake)

(3) IC601 makes the capstan motor rotate in the forward direction and the idle gear transmits the rotation to the S/T reel discs to take up the tape.

[5] FF/REW to STOP mode

(1) When the [STOP] button is pressed in the REW mode, the mechanism enters the playback standby mode.

(2) IC601 makes the loading motor rotate in the reverse direction and stops at the position V.
With this mode shift, the mechanism actuates S, T main brakes to stop the tape. Then, the capstan motor also stops by braking force 70ms after detecting “e” position.

(3) IC601 makes the loading motor rotate in the reverse direction again and stops the loading motor when the cam slider reaches the position IV (playback mode), thus setting the playback standby mode.

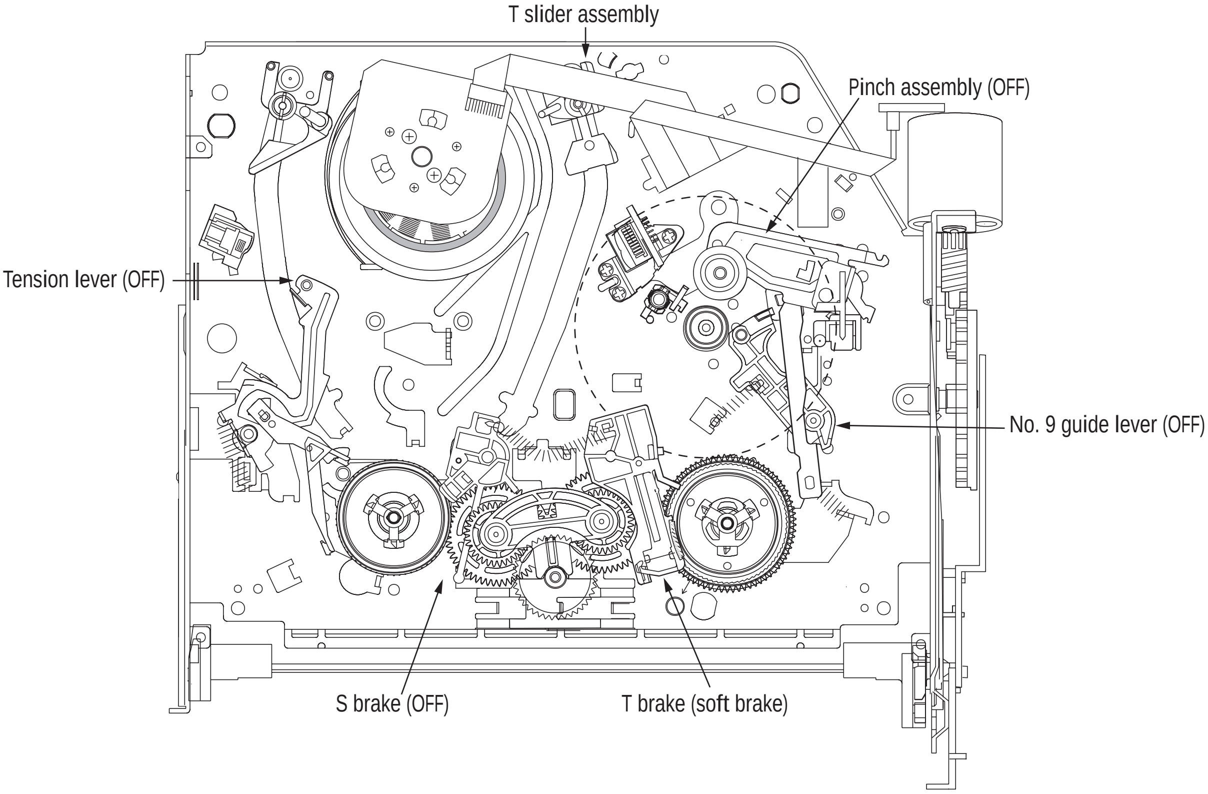


Fig. 8-26 FF/REW 2 Mode (Position VII)

[Playback mode]

(1) When the [PLAY] button is pressed in the stop mode, the mechanism enters the playback mode.
(2) IC601 controls cylinder motor drive IC and rotates the cylinder motor.
(3) IC601 controls Capstan Motor Drive IC to rotate the loading motor in the reverse direction and stops the motor when the cam slider reaches the position IV (playback mode). (When operating from the playback standby mode, the cam slider has been already on the position IV.) The mechanism works as follows :
  1) The pinch roller moves toward the capstan side and press fits the capstan.
  2) The No.9 guide is loaded once and then returned immediately.
  3) The tension post touches the tape, the band braking force is applied, and the tension servo mechanism works.
  4) The clutch holder assembly enters clutched condition.
  5) S,T brakes are released.
(4) IC601 makes the capstan rotate in the forward direction and feeds the tape. The idle gear transmits the rotation to the T reel disc and the reel disc takes up the tape at a constant torque by the clutch mechanism.
(5) IC601 controls the video circuit and switches the playback screen.
(6) The recording speed data identified by IC601 is displayed in the Led module.

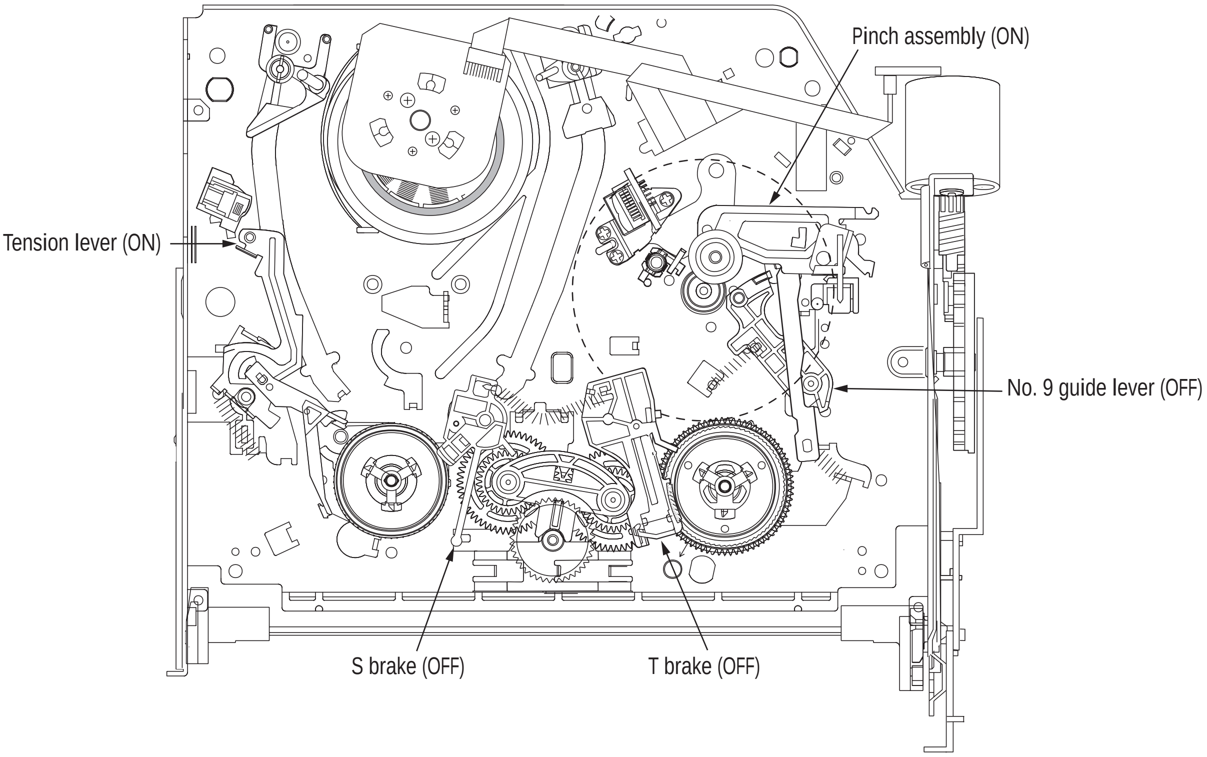


Fig. 8-27 Playback Mode (Position IV)

<Still mode>

(1) When the [PAUSE] button is pressed in the playback mode, the mechanism enters the still mode.
The cam slider is in the position IV (playback mode), the cylinder motor is rotating, and the capstan motor is rotating in the forward direction.
(2) IC 601 controls the audio circuit and actuates the audio mute function.
(3) The capstan motor enters the intermittent operation mode and then stops.
(4) IC 601 maintains the recording speed data just before the still operation.
(5) In the slow mode, the capstan motor rotates continuously in the intermittent driving.

<FPS mode>

(1) When the [FF] button is pressed in the playback mode, the mechanism enters the FPS mode (forward picture search). The cam slider is in the position IV (playback mode), the cylinder motor is rotating, and the capstan motor is rotating in the forward direction.
(2) IC 601 controls the audio circuit to actuate the audio mute operation.
(3) IC601 makes the capstan rotate at 7 times for SP, 21 times for SLP to feed the tape, respectively.
The tape is taken up at a constant torque by the clutch mechanism. (The mechanical operation is the same as that in the playback mode.)
(4) The recording speed data identified by IC601 is displayed on the Led module.

<RPS mode>

(1) When the [REW] button is pressed in the playback mode, the mechanism enters the RPS mode.
The cam slider is in the position IV (playback mode), the cylinder motor is rotating, and the capstan motor is rotating in the forward direction.

(2) IC601 controls the audio circuit to actuate the audio mute operation.

(3) IC601 controls Capstan Motor Drive IC to make the loading motor rotate in the reverse direction.
After 180ms the loading motor stops for 250ms. During the mode shift operation, the mechanism rotates the capstan motor in the forward direction for a constant time so that the tape is not slackened.

(4) When the cam slider reaches the position “c” (loading motor stoped for 250ms), the capstan motor is rotated in the reverse direction for a constant time, and the idle gear is swung toward the S reel disc side.
Then, the loading motor rotates in reverse direction and shifts to the position III (RPS mode).
When the cam slider reaches the position III (RPS mode), the loading motor stops.
The mechanism status is as follows :

1) The No.9 guide is loaded.
2) The tension post is separated from the tape.
3) The T soft brake is turned on.

The cpastan motor rotates in the reverse direction at 7 times for SP, 21 times for SLP to feed the tape in the REW direction, respectively. At the same time, the idle gear transmits the rotation to the S reel disc and the S reel disc takes up the tape by the clutch mechanism.

(5) The recording speed data identified by IC601 is displayed on the Led module.

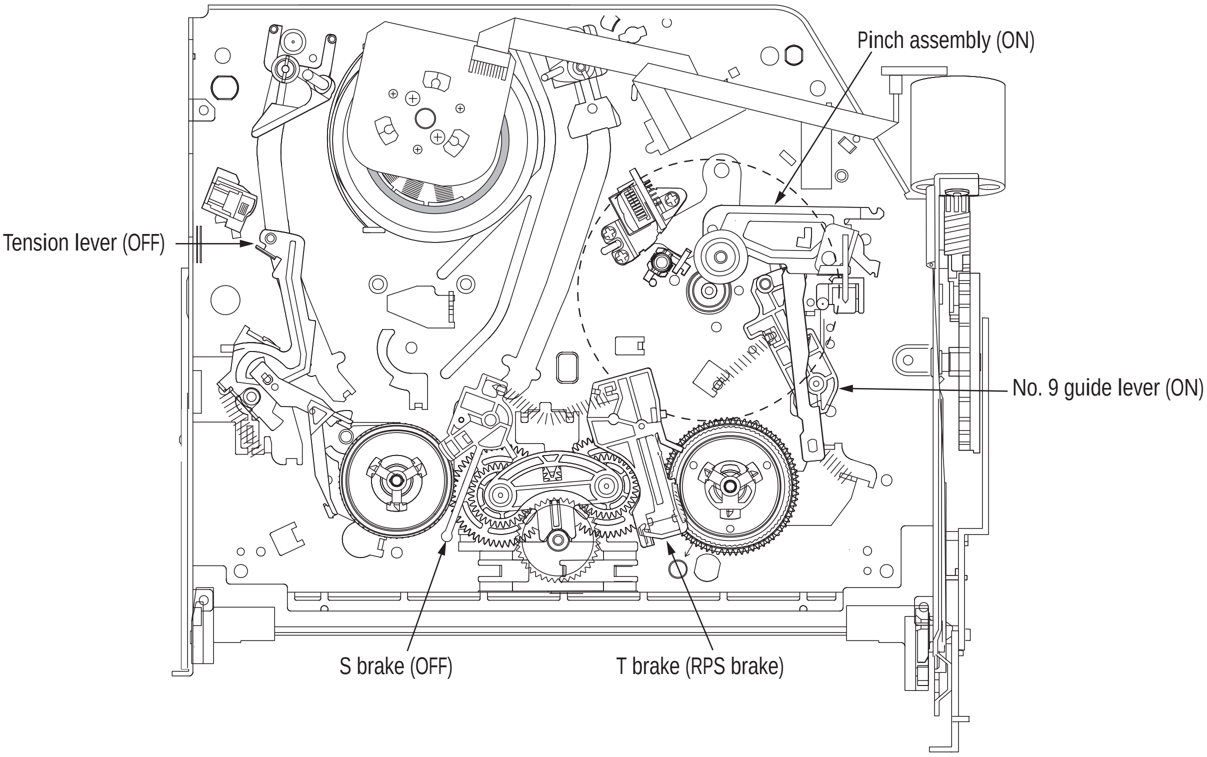


Fig. 8-28 RPS Mode (Position III)

[7] REC mode

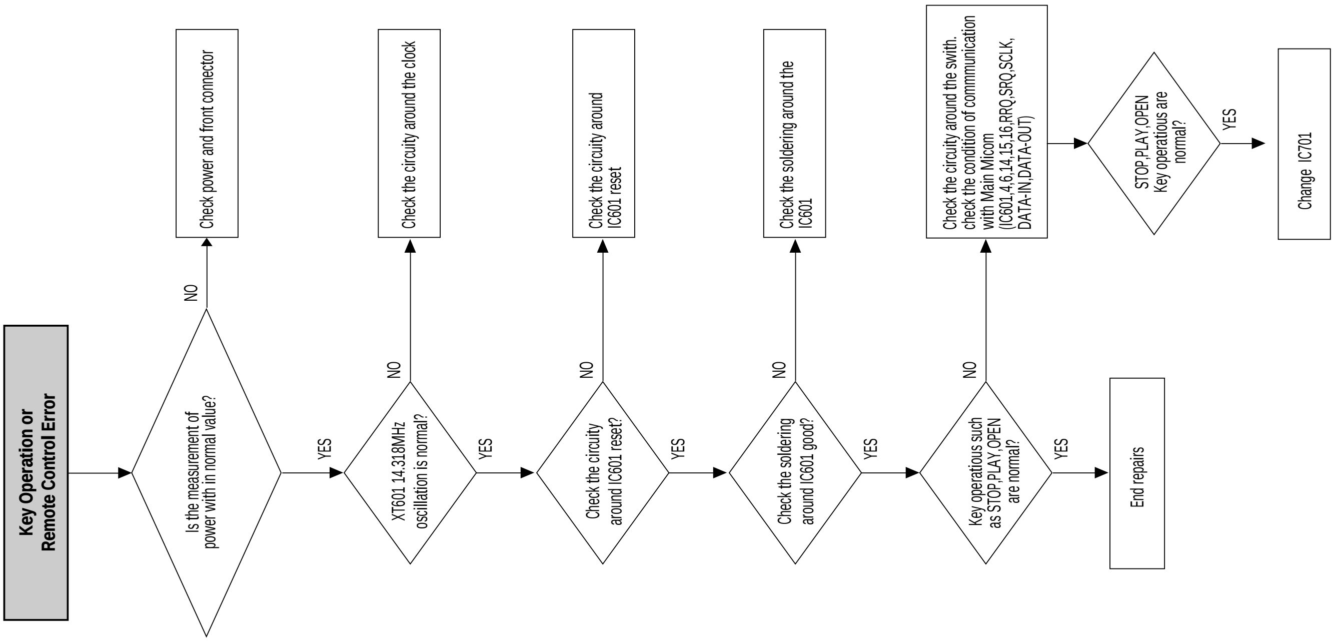
<REC mode>

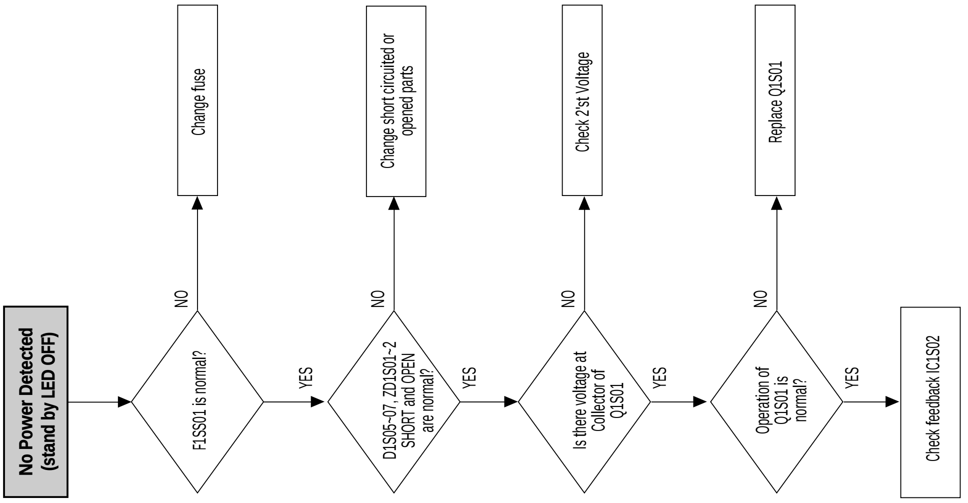
(1) When the [REC] button is pressed in the stop mode, the mechanism enters the REC mode.
(2) The cylinder motor starts and then the loading motor rotates in reverse direction.
The cam slider reaches the position IV (playback mode).
The tape is taken up at a constant torque. The mechanism operations are the same as those in the playback.
(3) IC601 controls the audio circuit and video circuit to set the record enable mode.
(4) Recording mute is released, thus setting the recording status. The CTL signal is output for recording.

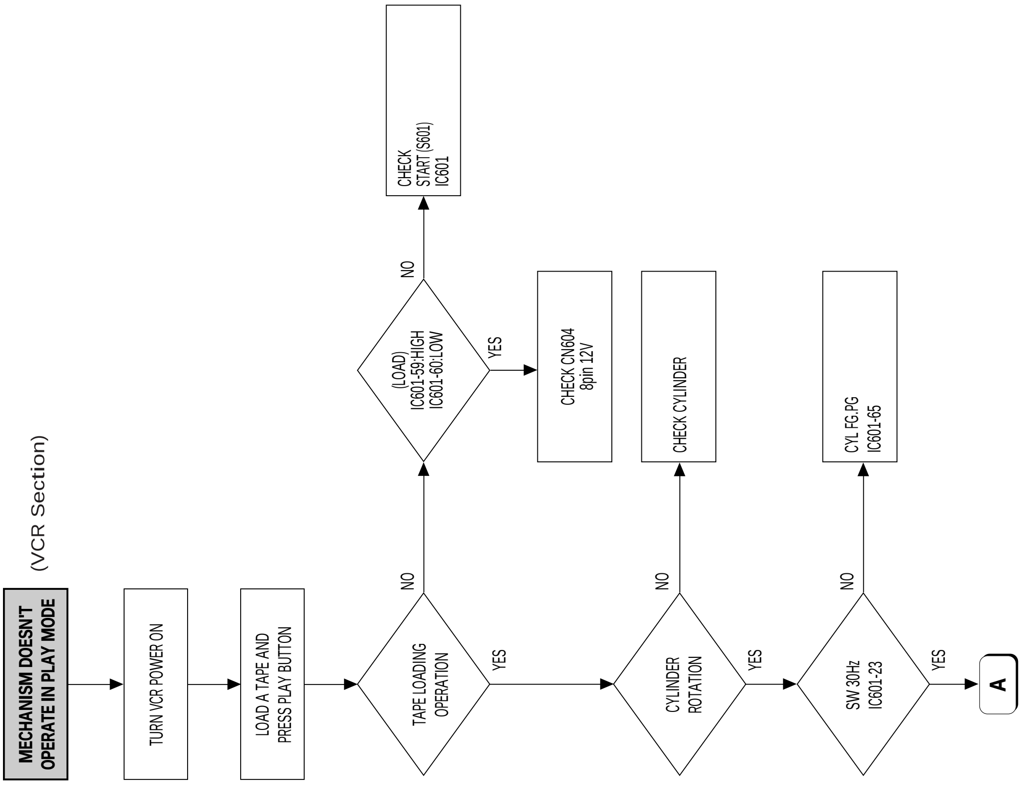
<REC PAUSE mode>

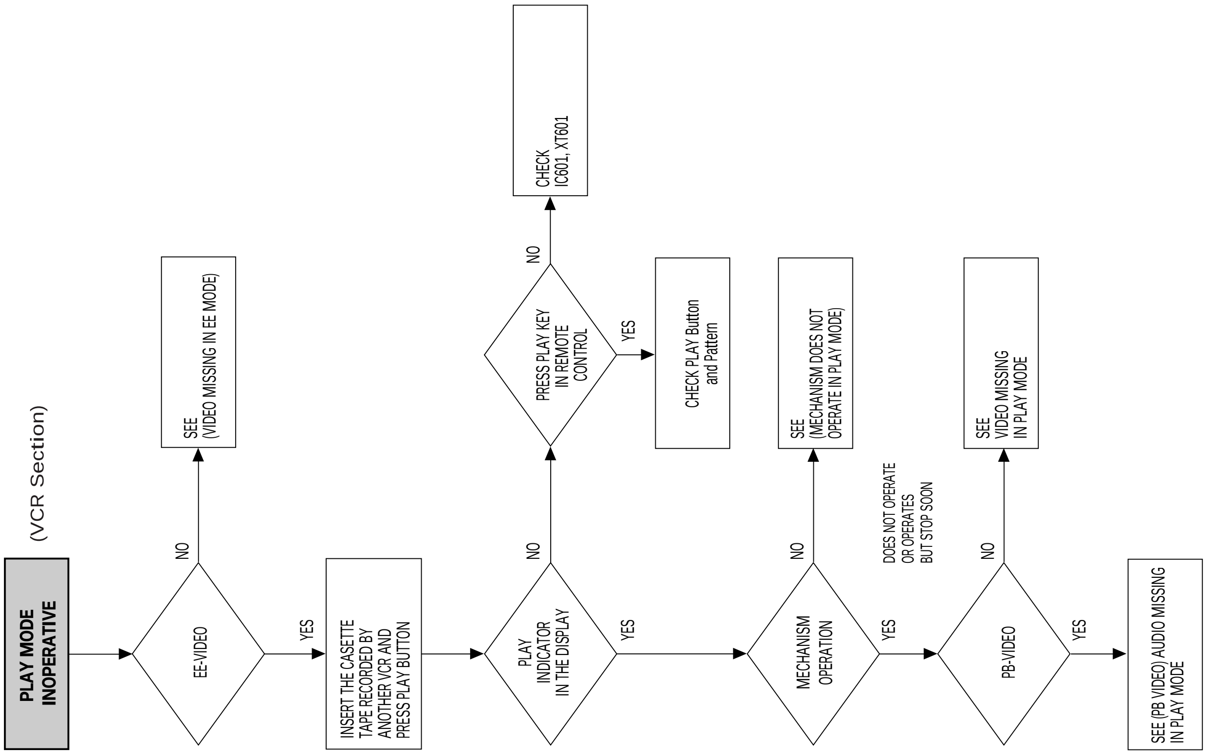
(1) When [PAUSE] button is pressed in the REC mode, the mechanism enters the REC pause mode.
(2) IC601 controls the audio circuit and the video circuit, and releases the record enable mode and performs the rewinding for synchronous editing.
(3) After completion of the rewinding for synchronous editing, the cam slider is in the position IV (playback mode), the cylinder motor is rotating, and the capstan motor and the loading motor stop.

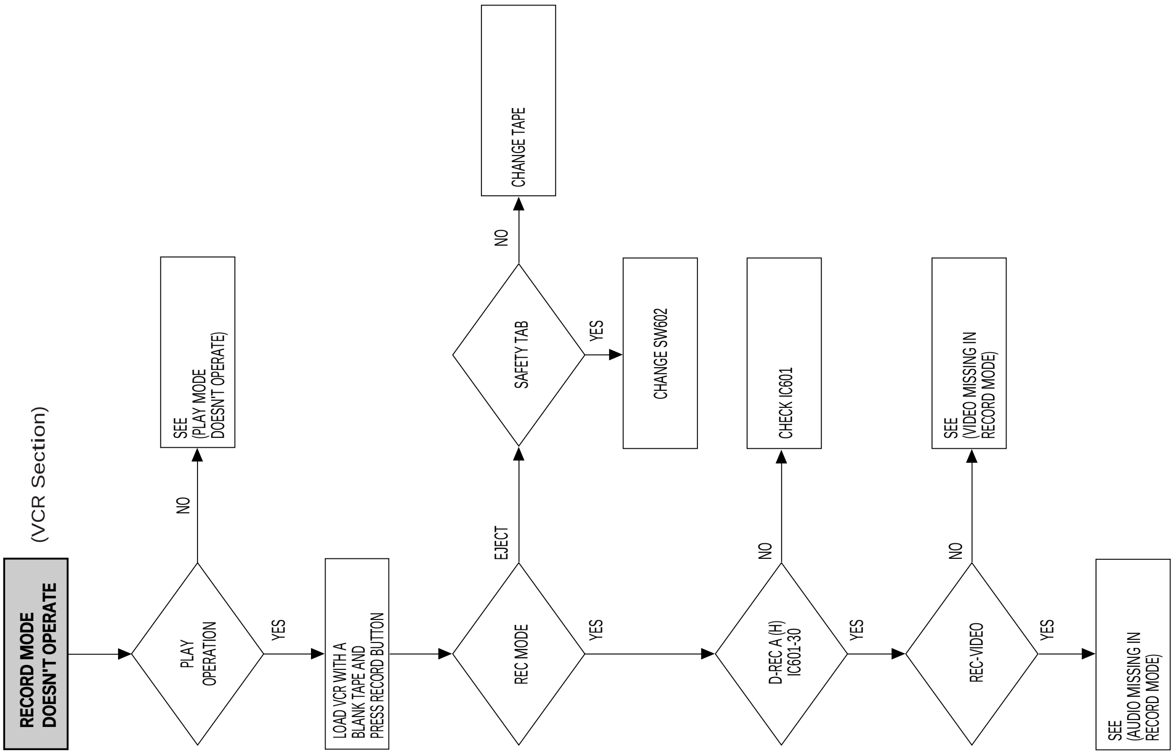
9. Troubleshooting

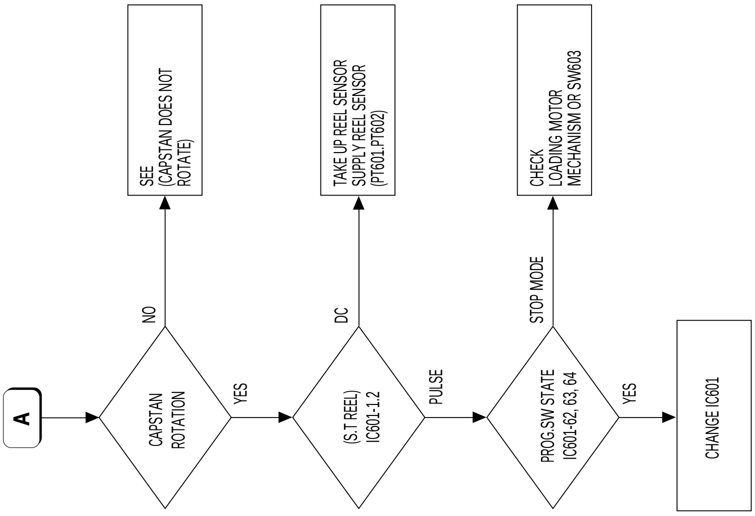

Key Operation or Remote Control Error
Is the measurement of power with in normal value?
NO
Check power and front connector
YES
XT601 14.318MHz oscillation is normal?
NO
Check the circuity around the clock
YES
Check the circuity around IC601 reset?
NO
Check the circuity around IC601 reset
YES
Check the soldering around IC601 good?
NO
Check the soldering around the IC601
YES
Key operatious such as STOP,PLAY,OPEN are normal?
NO
Check the circuity around the swith. check the condition of commmunication with Main Micom (IC601,4,6,14,15,16,RRQ,SRQ,SCLK, DATA-IN,DATA-OUT)
STOP,PLAY,OPEN Key operatious are normal?
YES
Change IC701
YES
End repairs

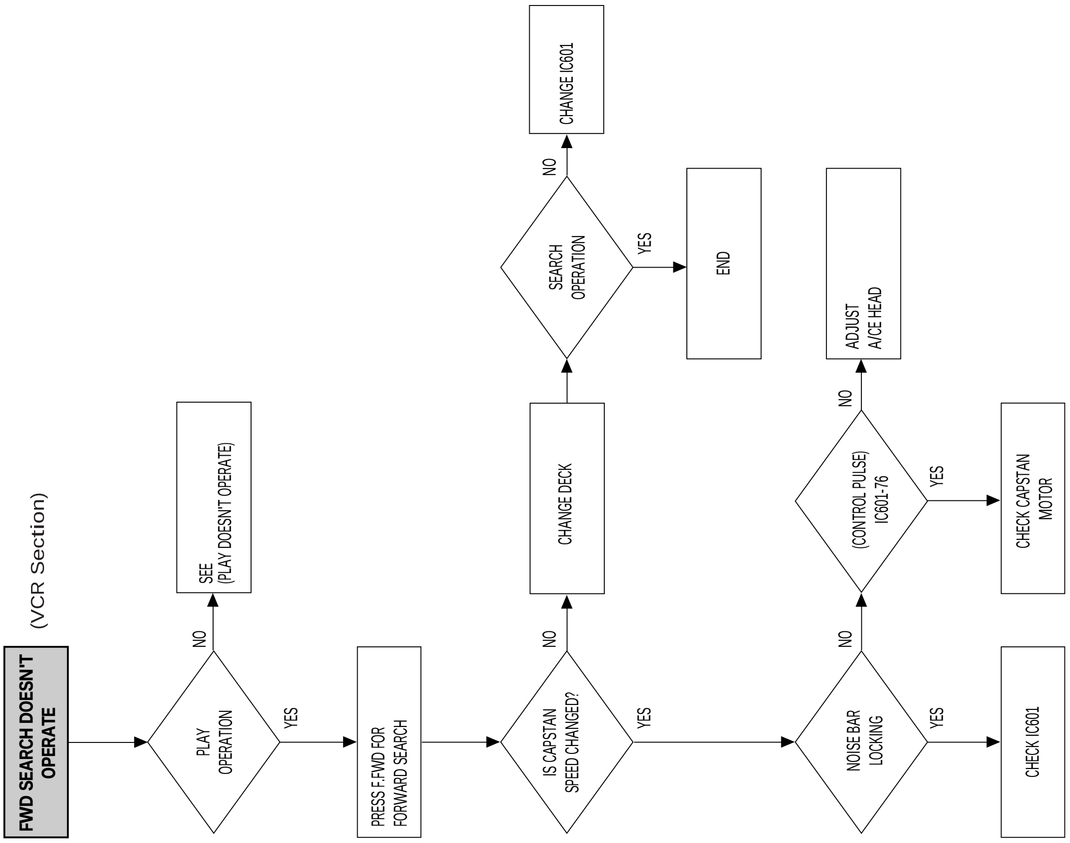

No Power Detected (stand by LED OFF)
F1SS01 is normal?
NO
Change fuse
YES
D1S05~07, ZD1S01~2 SHORT and OPEN are normal?
NO
Change short circuited or opened parts
YES
Is there voltage at Collector of Q1S01
NO
Check 2'st Voltage
YES
Operation of Q1S01 is normal?
NO
Replace Q1S01
YES
Check feedback IC1S02

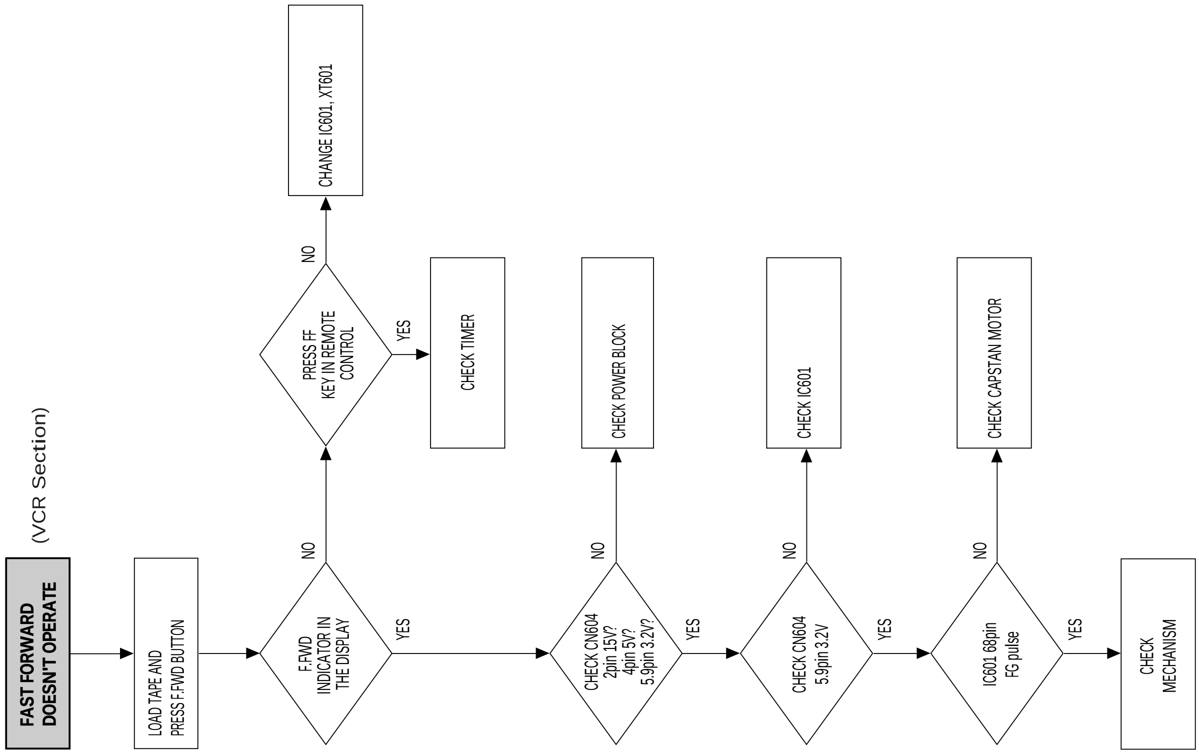

MECHANISM DOESN'T OPERATE IN PLAY MODE
(VCR Section)
TURN VCR POWER ON
LOAD A TAPE AND PRESS PLAY BUTTON
TAPE LOADING OPERATION
NO
YES
(LOAD) IC601-59:HIGH IC601-60:LOW
NO
YES
CHECK START (S601) IC601
CHECK CN604 8pin 12V
CYLINDER ROTATION
NO
YES
CHECK CYLINDER
SW 30Hz IC601-23
NO
YES
CYL FG.PG IC601-65
A

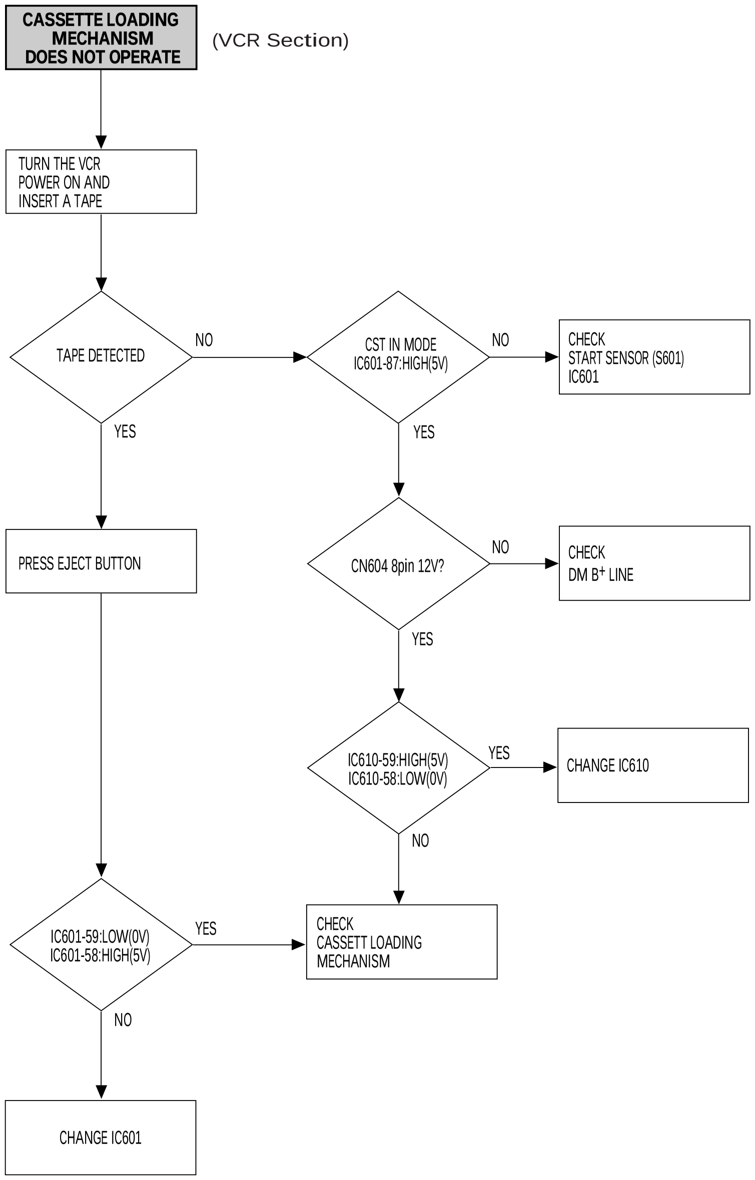

PLAY MODE INOPERATIVE
(VCR Section)
EE-VIDEO
NO
YES
SEE (VIDEO MISSING IN EE MODE)
INSERT THE CASETTE TAPE RECORDED BY ANOTHER VCR AND PRESS PLAY BUTTON
PLAY INDICATOR IN THE DISPLAY
NO
YES
PRESS PLAY KEY IN REMOTE CONTROL
NO
YES
CHECK IC601, XT601
CHECK PLAY Button and Pattern
MECHANISM OPERATION
NO
YES
DOES NOT OPERATE OR OPERATES BUT STOP SOON
SEE (MECHANISM DOES NOT OPERATE IN PLAY MODE)
PB-VIDEO
NO
YES
SEE VIDEO MISSING IN PLAY MODE
SEE (PB VIDEO) AUDIO MISSING IN PLAY MODE

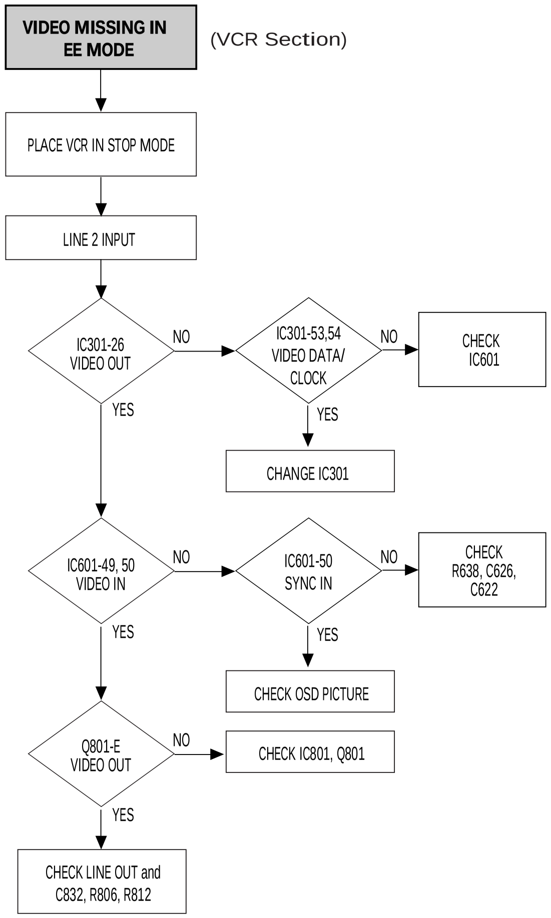

RECORD MODE DOESN'T OPERATE
(VCR Section)
PLAY OPERATION
NO
SEE (PLAY MODE DOESN'T OPERATE)
YES
LOAD VCR WITH A BLANK TAPE AND PRESS RECORD BUTTON
REC MODE
EJECT
SAFETY TAB
NO
CHANGE TAPE
YES
CHANGE SW602
YES
D-REC A (H) IC601-30
NO
CHECK IC601
YES
REC-VIDEO
NO
SEE (VIDEO MISSING IN RECORD MODE)
YES
SEE (AUDIO MISSING IN RECORD MODE)

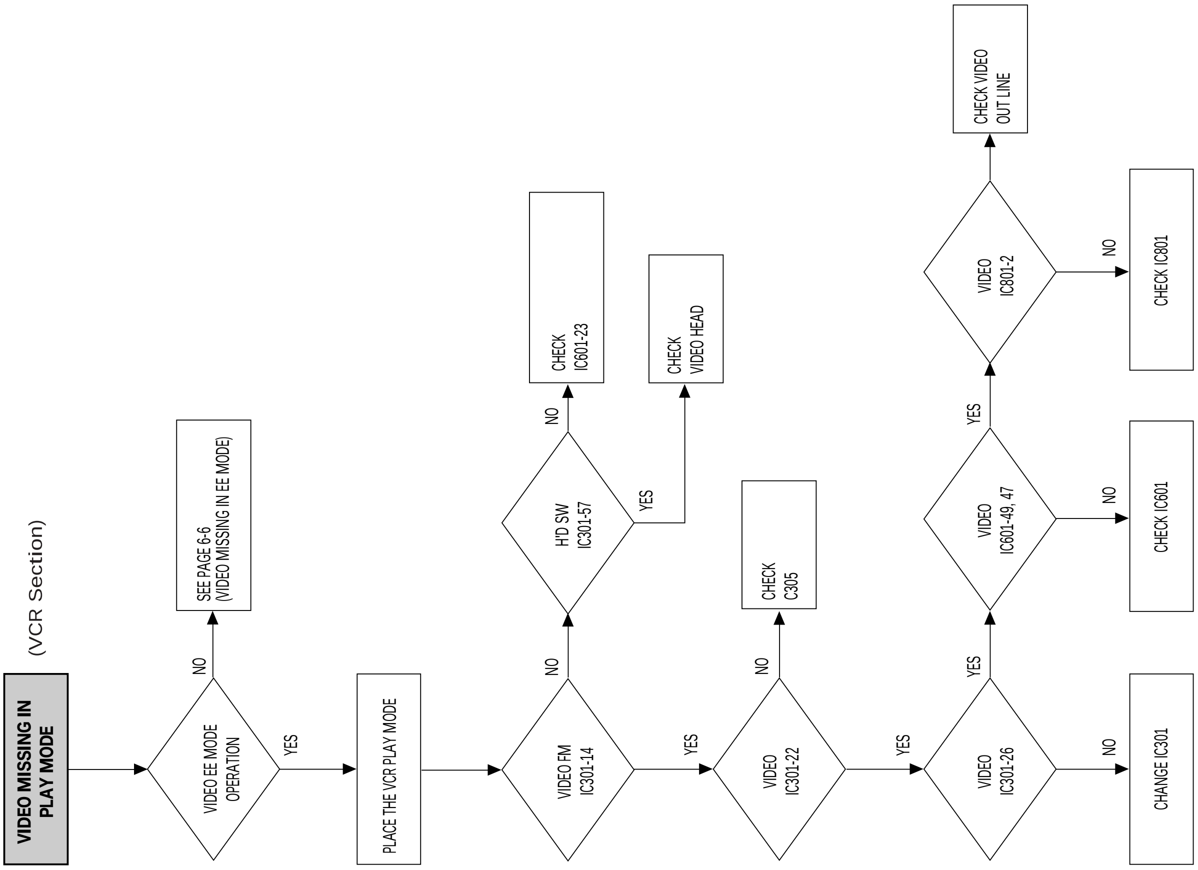

A
CAPSTAN ROTATION
NO
SEE (CAPSTAN DOES NOT ROTATE)
YES
(S.T REEL) IC601-1.2
DC
TAKE UP REEL SENSOR SUPPLY REEL SENSOR (PT601.PT602)
PULSE
PROG.SW STATE IC601-62, 63, 64
STOP MODE
CHECK LOADING MOTOR MECHANISM OR SW603
YES
CHANGE IC601

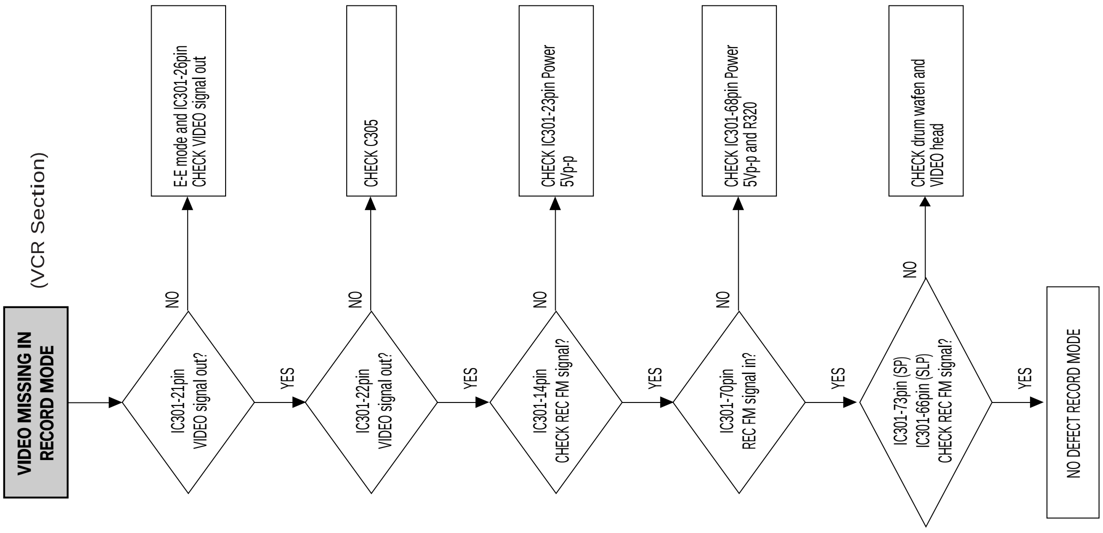

FWD SEARCH DOESN'T OPERATE
(VCR Section)
PLAY OPERATION
NO
SEE (PLAY DOESN'T OPERATE)
YES
PRESS F.FWD FOR FORWARD SEARCH
IS CAPSTAN SPEED CHANGED?
NO
CHANGE DECK
SEARCH OPERATION
NO
CHANGE IC601
YES
END
YES
NOISE BAR LOCKING
NO
(CONTROL PULSE) IC601-76
NO
ADJUST A/CE HEAD
YES
CHECK CAPSTAN MOTOR
YES
CHECK IC601


FAST FORWARD DOESN'T OPERATE
(VCR Section)
LOAD TAPE AND PRESS F.FWD BUTTON
F.FWD INDICATOR IN THE DISPLAY
NO
PRESS FF. KEY IN REMOTE CONTROL
NO
CHANGE IC601, XT601
YES
CHECK TIMER
YES
CHECK CN604 2pin 15V? 4pin 5V? 5.9pin 3.2V?
NO
CHECK POWER BLOCK
YES
CHECK CN604 5.9pin 3.2V
NO
CHECK IC601
YES
IC601 68pin FG pulse
NO
CHECK CAPSTAN MOTOR
YES
CHECK MECHANISM


CASSETTE LOADING MECHANISM DOES NOT OPERATE
(VCR Section)
TURN THE VCR POWER ON AND INSERT A TAPE
TAPE DETECTED
NO
YES
CST IN MODE IC601-87:HIGH(5V)
NO
YES
CHECK START SENSOR (S601) IC601
PRESS EJECT BUTTON
CN604 8pin 12V?
NO
YES
CHECK DM B+ LINE
IC610-59:HIGH(5V) IC610-58:LOW(0V)
YES
NO
CHANGE IC610
IC601-59:LOW(0V) IC601-58:HIGH(5V)
YES
NO
CHECK CASSETT LOADING MECHANISM
CHANGE IC601


VIDEO MISSING IN EE MODE
(VCR Section)
PLACE VCR IN STOP MODE
LINE 2 INPUT
IC301-26 VIDEO OUT
NO
YES
IC301-53,54 VIDEO DATA/ CLOCK
NO
YES
CHECK IC601
CHANGE IC301
IC601-49, 50 VIDEO IN
NO
YES
IC601-50 SYNC IN
NO
YES
CHECK R638, C626, C622
CHECK OSD PICTURE
Q801-E VIDEO OUT
NO
YES
CHECK IC801, Q801
CHECK LINE OUT and C832, R806, R812

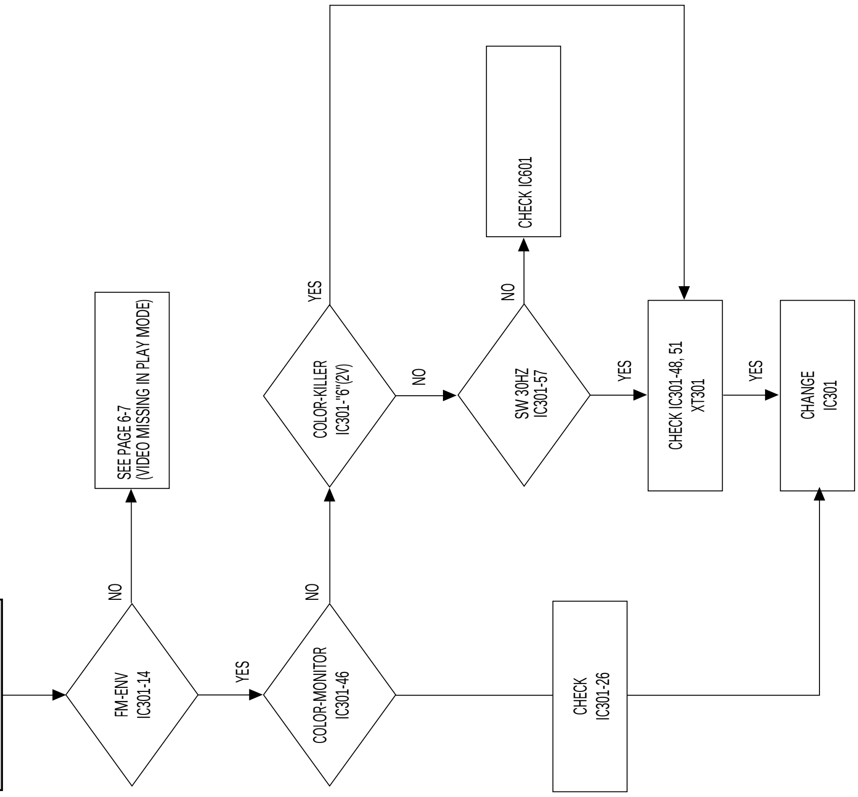

VIDEO MISSING IN PLAY MODE
(VCR Section)
VIDEO EE MODE OPERATION
NO
SEE PAGE 6-6 (VIDEO MISSING IN EE MODE)
YES
PLACE THE VCR PLAY MODE
VIDEO FM IC301-14
NO
H'D SW IC301-57
NO
CHECK IC601-23
YES
CHECK VIDEO HEAD
YES
VIDEO IC301-22
NO
CHECK C305
YES
VIDEO IC301-26
NO
CHANGE IC301
YES
VIDEO IC601-49, 47
NO
CHECK IC601
YES
VIDEO IC801-2
NO
CHECK IC801
CHECK VIDEO OUT LINE


VIDEO MISSING IN RECORD MODE
(VCR Section)
IC301-21pin VIDEO signal out?
NO
E-E mode and IC301-26pin CHECK VIDEO signal out
YES
IC301-22pin VIDEO signal out?
NO
CHECK C305
YES
IC301-14pin CHECK REC FM signal?
NO
CHECK IC301-23pin Power 5Vp-p
YES
IC301-70pin REC FM signal in?
NO
CHECK IC301-68pin Power 5Vp-p and R320
YES
IC301-73pin (SP) IC301-66pin (SLP) CHECK REC FM signal?
NO
CHECK drum wafen and VIDEO head
YES
NO DEFECT RECORD MODE

COLOR MISSING IN PLAY MODE

(VCR Section)

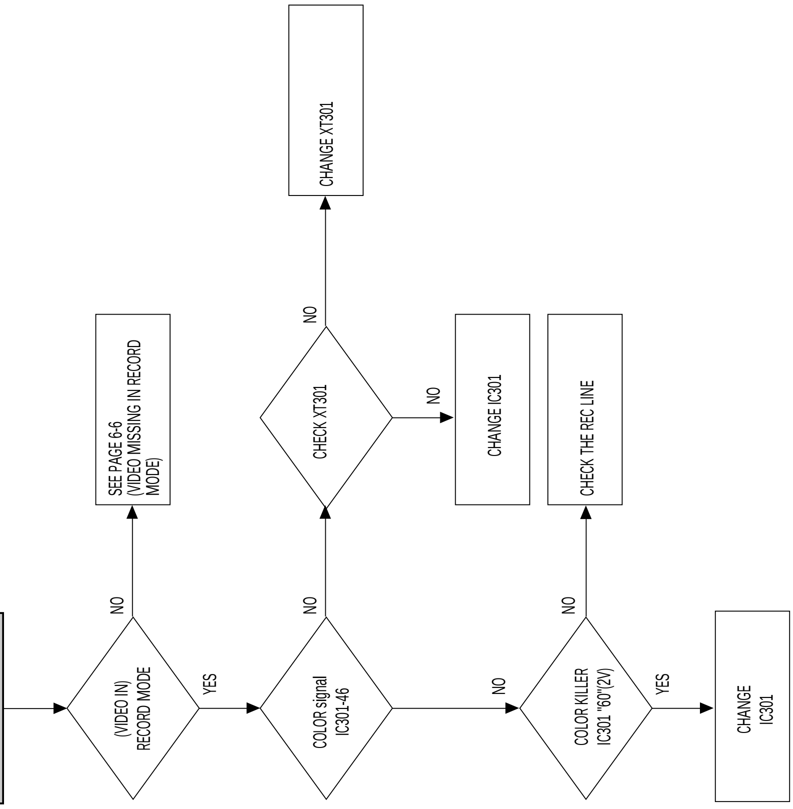
NOTE: XT301 - Always (3.579545MHz)

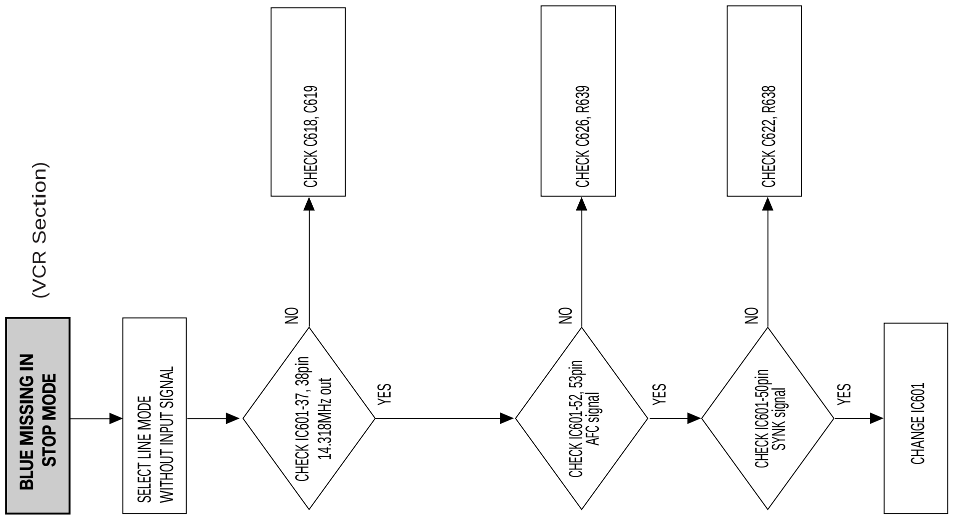

FM-ENV
IC301-14
NO
SEE PAGE 6-7
(VIDEO MISSING IN PLAY MODE)
YES
COLOR-MONITOR
IC301-46
NO
COLOR-KILLER
IC301-"6"(2V)
YES
NO
SW 30HZ
IC301-57
NO
CHECK IC601
YES
CHECK IC301-48, 51
XT301
YES
CHANGE
IC301
CHECK
IC301-26

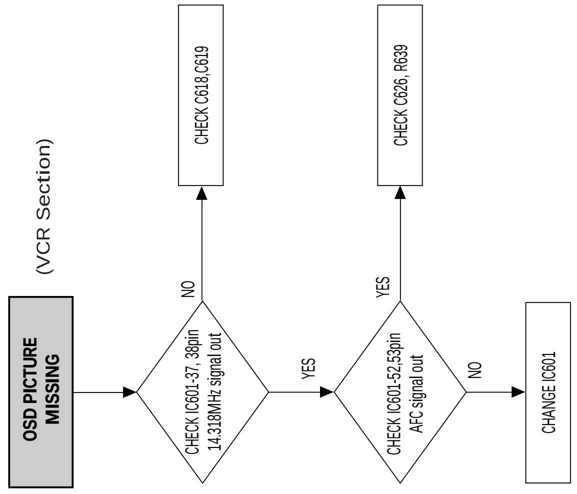
COLOR MISSING IN RECORD MODE

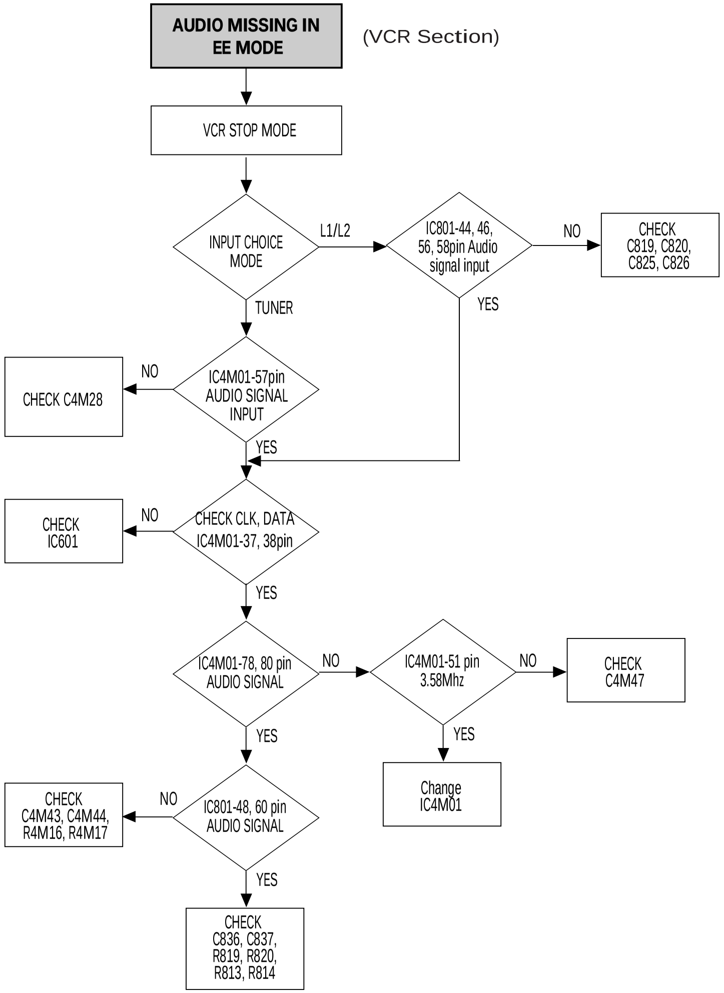
(VCR Section)

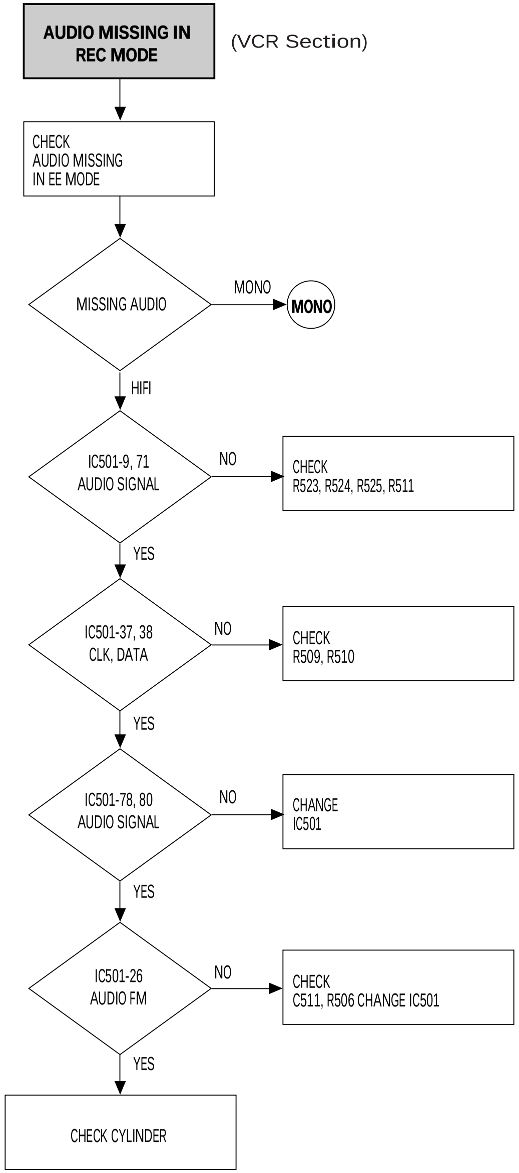
NOTE: XT301 - Always (3.579545MHz)

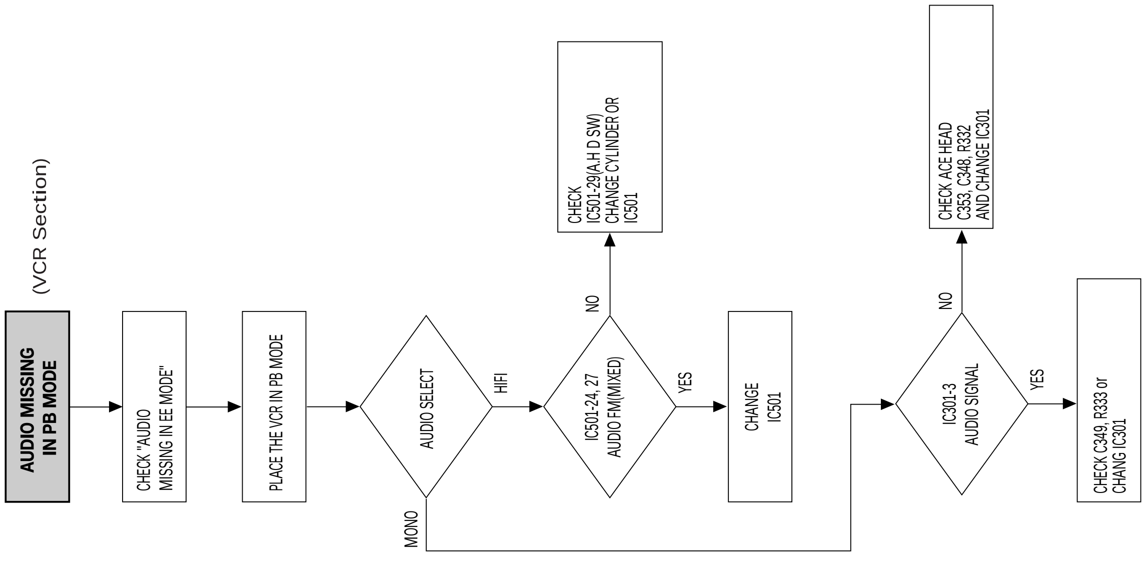

(VIDEO IN)
RECORD MODE
NO
SEE PAGE 6-6
(VIDEO MISSING IN RECORD
MODE)
YES
COLOR signal
IC301-46
NO
CHECK XT301
NO
CHANGE XT301
NO
CHANGE IC301
NO
COLOR KILLER
IC301 "60"(2V)
NO
CHECK THE REC LINE
YES
CHANGE
IC301

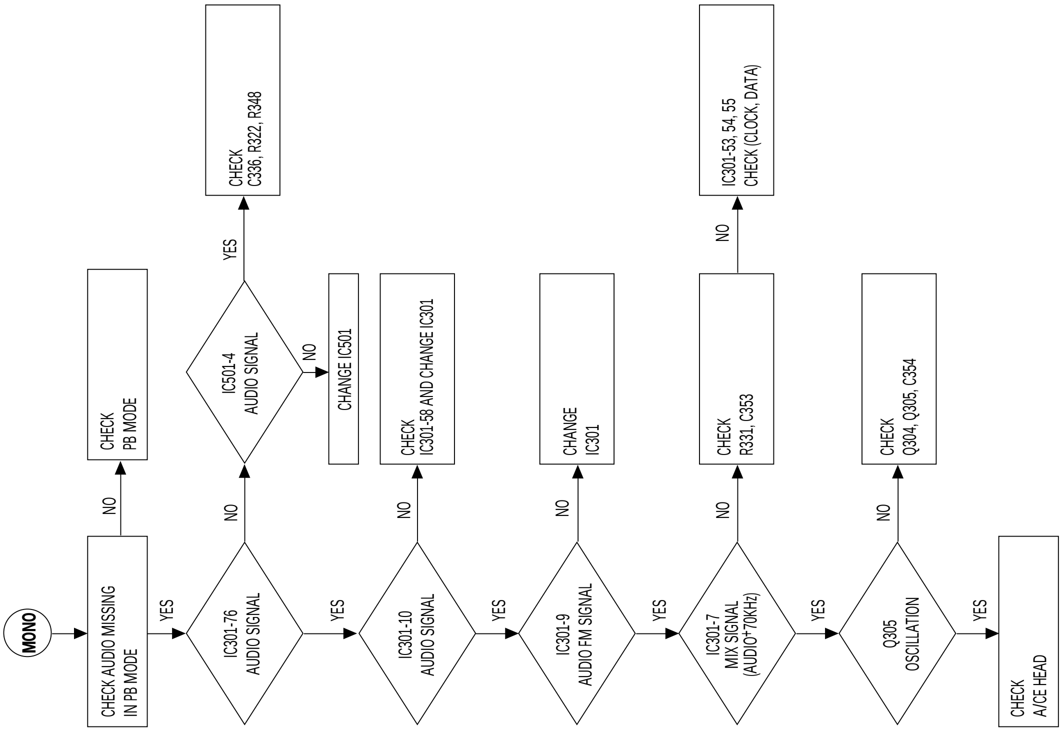

BLUE MISSING IN STOP MODE
(VCR Section)
SELECT LINE MODE WITHOUT INPUT SIGNAL
CHECK IC601-37, 38pin 14.318MHz out
NO
CHECK C618, C619
YES
CHECK IC601-52, 53pin AFC signal
NO
CHECK C626, R639
YES
CHECK IC601-50pin SYNK signal
NO
CHECK C622, R638
YES
CHANGE IC601

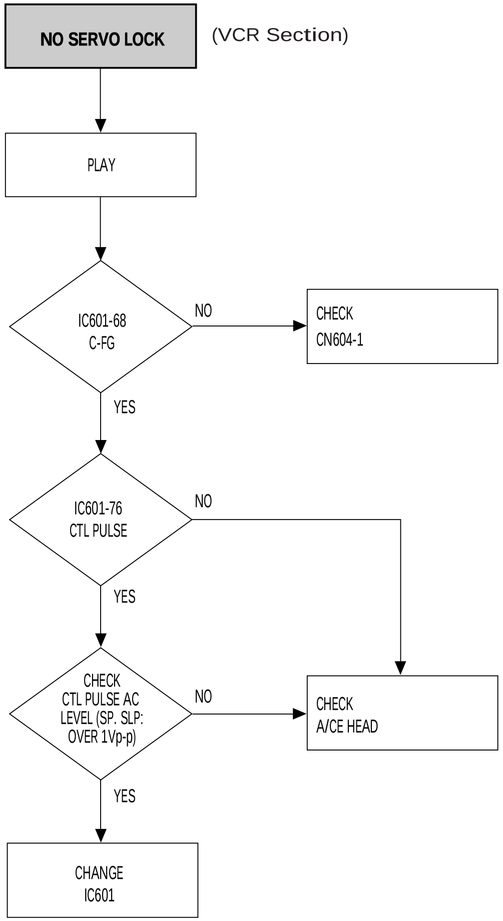

OSD PICTURE MISSING
(VCR Section)
CHECK IC601-37, 38pin 14.318MHz signal out
NO
CHECK C618,C619
YES
CHECK IC601-52,53pin AFC signal out
YES
CHECK C626, R639
NO
CHANGE IC601

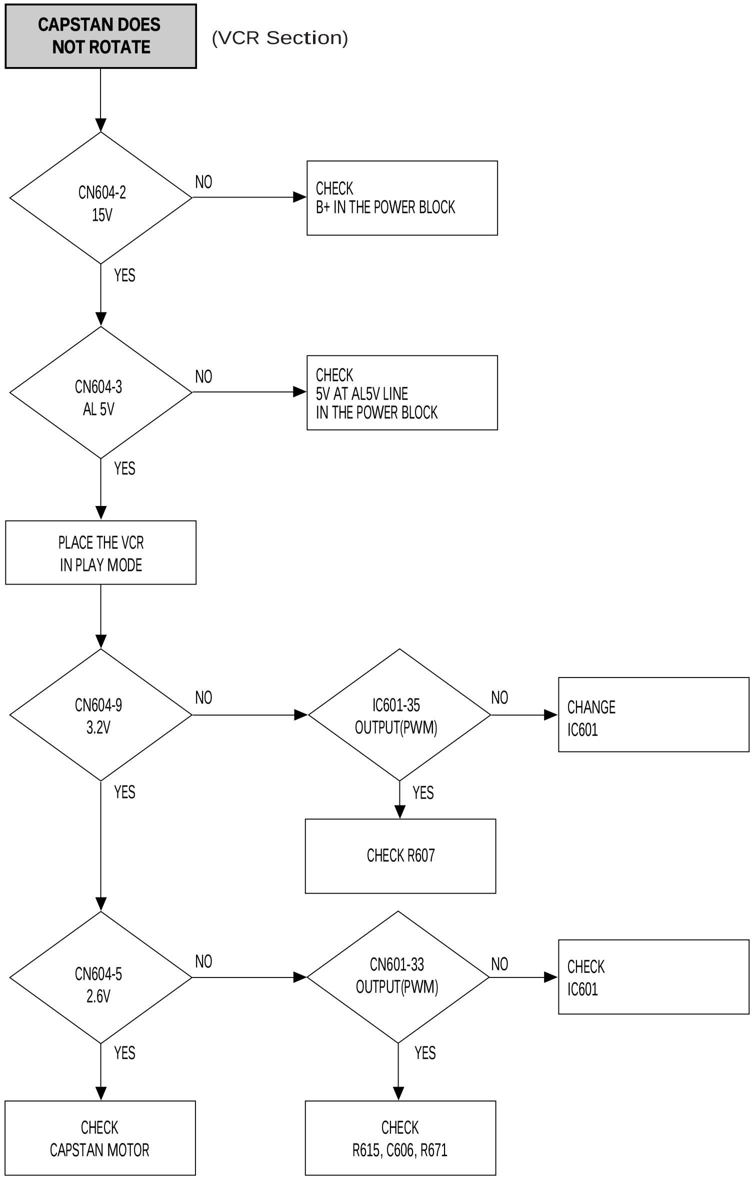

AUDIO MISSING IN EE MODE
(VCR Section)
VCR STOP MODE
INPUT CHOICE MODE
L1/L2
IC801-44, 46, 56, 58pin Audio signal input
NO
CHECK C819, C820, C825, C826
YES
TUNER
IC4M01-57pin AUDIO SIGNAL INPUT
NO
CHECK C4M28
YES
CHECK CLK, DATA IC4M01-37, 38pin
NO
CHECK IC601
YES
IC4M01-78, 80 pin AUDIO SIGNAL
NO
IC4M01-51 pin 3.58Mhz
NO
CHECK C4M47
YES
Change IC4M01
YES
IC801-48, 60 pin AUDIO SIGNAL
NO
CHECK C4M43, C4M44, R4M16, R4M17
YES
CHECK C836, C837, R819, R820, R813, R814

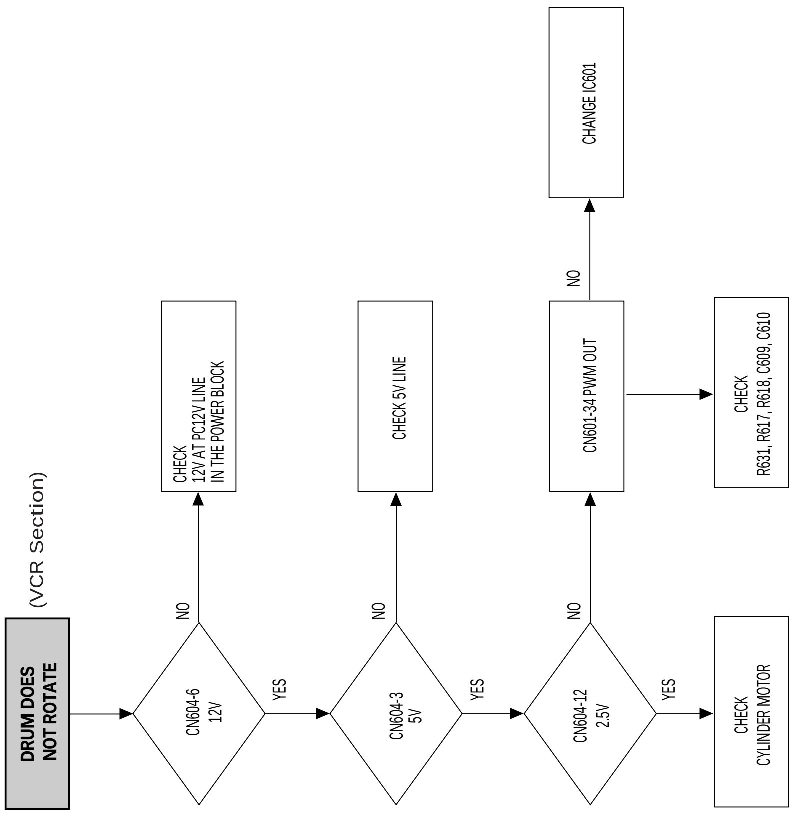

AUDIO MISSING IN REC MODE
(VCR Section)
CHECK AUDIO MISSING IN EE MODE
MISSING AUDIO
MONO
MONO
HIFI
IC501-9, 71 AUDIO SIGNAL
NO
CHECK R523, R524, R525, R511
YES
IC501-37, 38 CLK, DATA
NO
CHECK R509, R510
YES
IC501-78, 80 AUDIO SIGNAL
NO
CHANGE IC501
YES
IC501-26 AUDIO FM
NO
CHECK C511, R506 CHANGE IC501
YES
CHECK CYLINDER


(VCR Section)
AUDIO MISSING IN PB MODE
CHECK "AUDIO MISSING IN EE MODE"
PLACE THE VCR IN PB MODE
AUDIO SELECT
HIFI
MONO
IC501-24, 27 AUDIO FM(MIXED)
NO
CHECK IC501-29(A.H D SW) CHANGE CYLINDER OR IC501
YES
CHANGE IC501
IC301-3 AUDIO SIGNAL
NO
CHECK ACE HEAD C353, C348, R332 AND CHANGE IC301
YES
CHECK C349, R333 or CHANG IC301

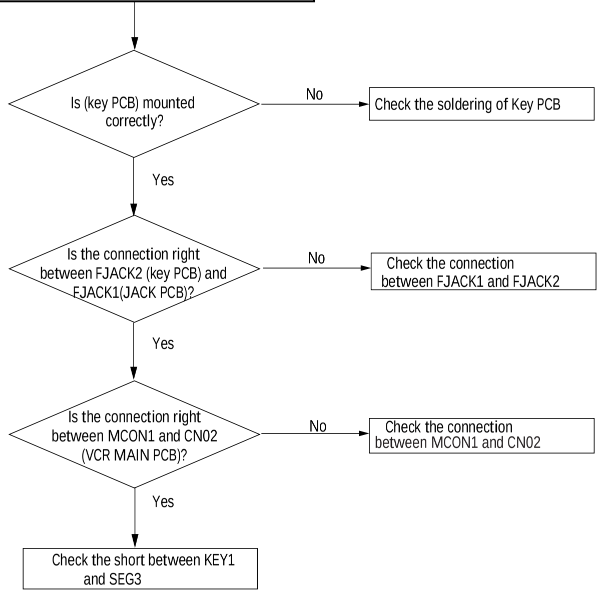

MONO
CHECK AUDIO MISSING IN PB MODE
NO
CHECK PB MODE
YES
IC301-76 AUDIO SIGNAL
NO
IC501-4 AUDIO SIGNAL
YES
CHECK C336, R322, R348
NO
CHANGE IC501
YES
IC301-10 AUDIO SIGNAL
NO
CHECK IC301-58 AND CHANGE IC301
YES
IC301-9 AUDIO FM SIGNAL
NO
CHANGE IC301
YES
IC301-7 MIX SIGNAL (AUDIO+70KHz)
NO
CHECK R331, C353
NO
IC301-53, 54, 55 CHECK (CLOCK, DATA)
YES
Q305 OSCILLATION
NO
CHECK Q304, Q305, C354
YES
CHECK A/CE HEAD


NO SERVO LOCK
(VCR Section)
PLAY
IC601-68
C-FG
NO
CHECK
CN604-1
YES
IC601-76
CTL PULSE
NO
YES
CHECK
CTL PULSE AC
LEVEL (SP. SLP:
OVER 1Vp-p)
NO
CHECK
A/CE HEAD
YES
CHANGE
IC601

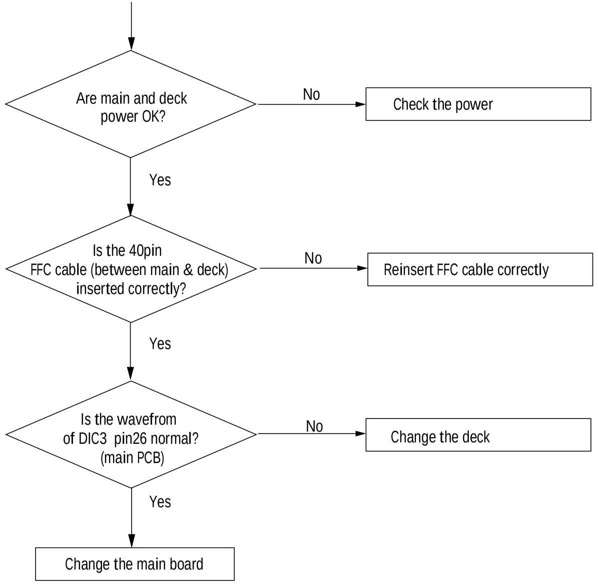

CAPSTAN DOES
NOT ROTATE
(VCR Section)
CN604-2
15V
NO
CHECK
B+ IN THE POWER BLOCK
YES
CN604-3
AL 5V
NO
CHECK
5V AT AL5V LINE
IN THE POWER BLOCK
YES
PLACE THE VCR
IN PLAY MODE
CN604-9
3.2V
NO
IC601-35
OUTPUT(PWM)
NO
CHANGE
IC601
YES
CHECK R607
YES
CN604-5
2.6V
NO
CN601-33
OUTPUT(PWM)
NO
CHECK
IC601
YES
CHECK
CAPSTAN MOTOR
YES
CHECK
R615, C606, R671


DRUM DOES NOT ROTATE
(VCR Section)
CN604-6 12V
NO
CHECK 12V AT PC12V LINE IN THE POWER BLOCK
YES
CN604-3 5V
NO
CHECK 5V LINE
YES
CN604-12 2.5V
NO
CN601-34 PWM OUT
NO
CHANGE IC601
CHECK R631, R617, R618, C609, C610
YES
CHECK CYLINDER MOTOR

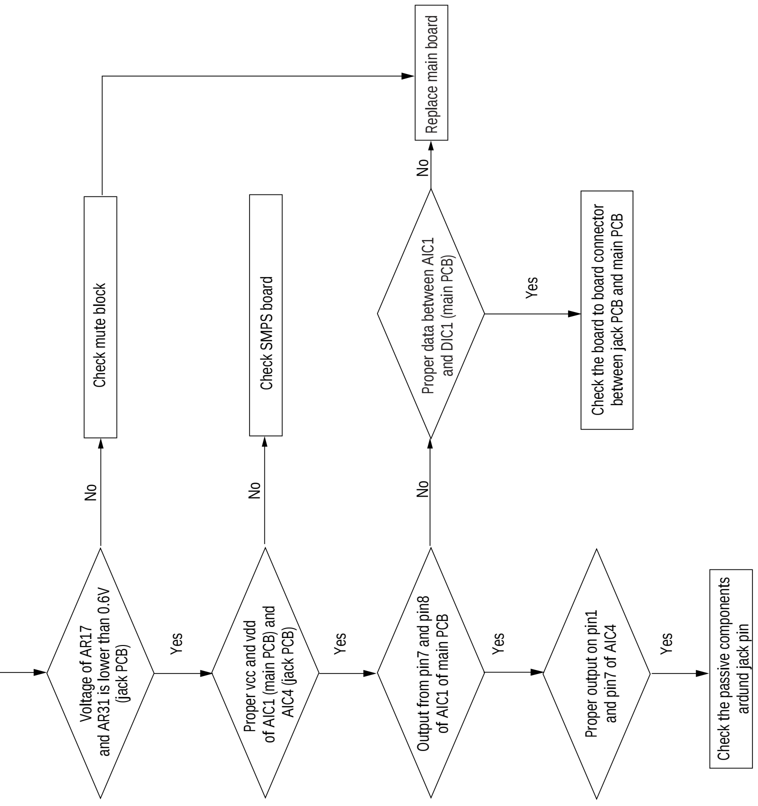
Tray repeating open/close operation


Is (key PCB) mounted correctly?
No
Check the soldering of Key PCB
Yes
Is the connection right between FJACK2 (key PCB) and FJACK1(JACK PCB)?
No
Check the connection between FJACK1 and FJACK2
Yes
Is the connection right between MCON1 and CN02 (VCR MAIN PCB)?
No
Check the connection between MCON1 and CN02
Yes
Check the short between KEY1 and SEG3

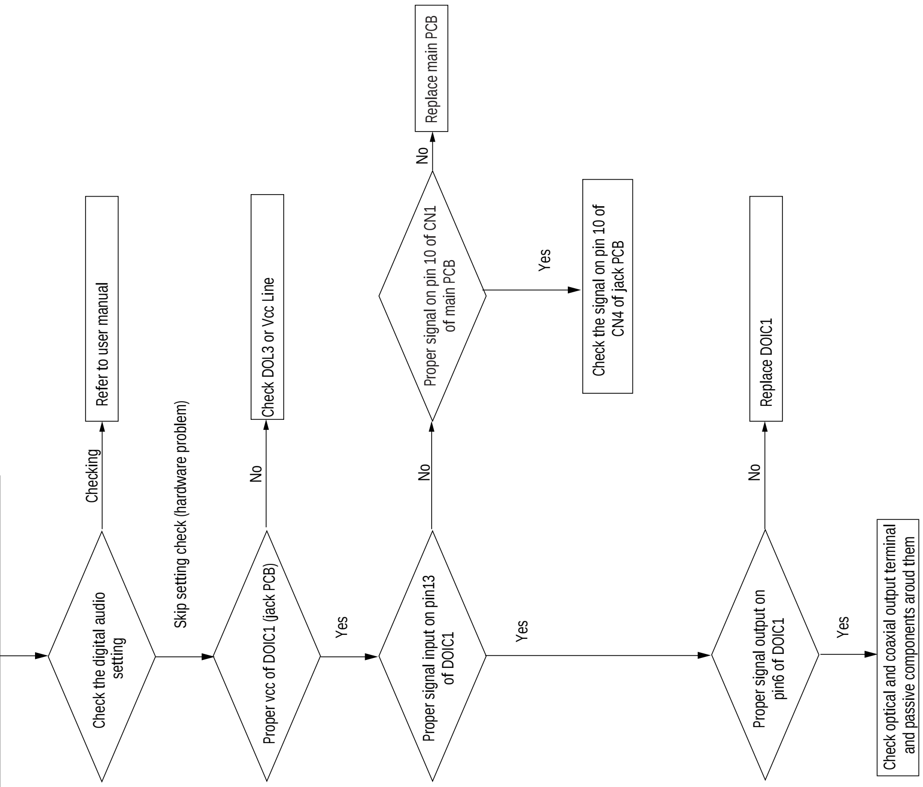
Disc loading error


Are main and deck power OK?
No
Check the power
Yes
Is the 40pin FFC cable (between main & deck) inserted correctly?
No
Reinsert FFC cable correctly
Yes
Is the wavefrom of DIC3 pin26 normal? (main PCB)
No
Change the deck
Yes
Change the main board

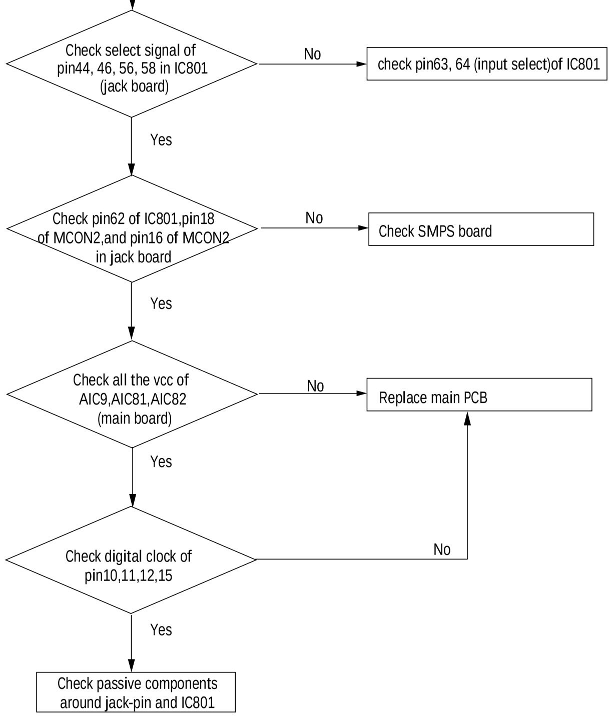
No Analog Audio Output


Voltage of AR17 and AR31 is lower than 0.6V (jack PCB)
No
Check mute block
Yes
Proper vcc and vdd of AIC1 (main PCB) and AIC4 (jack PCB)
No
Check SMPS board
Yes
Output from pin7 and pin8 of AIC1 of main PCB
No
Proper data between AIC1 and DIC1 (main PCB)
No
Replace main board
Yes
Check the board to board connector between jack PCB and main PCB
Yes
Proper output on pin1 and pin7 of AIC4
Yes
Check the passive components ardund jack pin

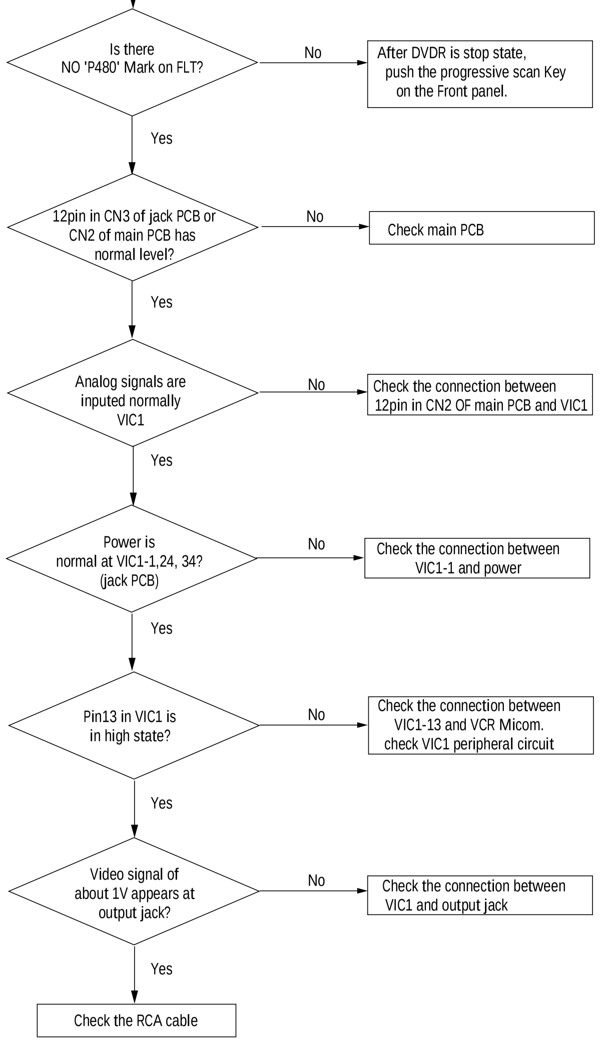
No digital audio out


Check the digital audio setting
Checking
Refer to user manual
Skip setting check (hardware problem)
Proper vcc of DOIC1 (jack PCB)
No
Check DOL3 or Vcc Line
Yes
Proper signal input on pin13 of DOIC1
No
Proper signal on pin 10 of CN1 of main PCB
No
Replace main PCB
Yes
Check the signal on pin 10 of CN4 of jack PCB
Yes
Proper signal output on pin6 of DOIC1
No
Replace DOIC1
Yes
Check optical and coaxial output terminal and passive components aroud them

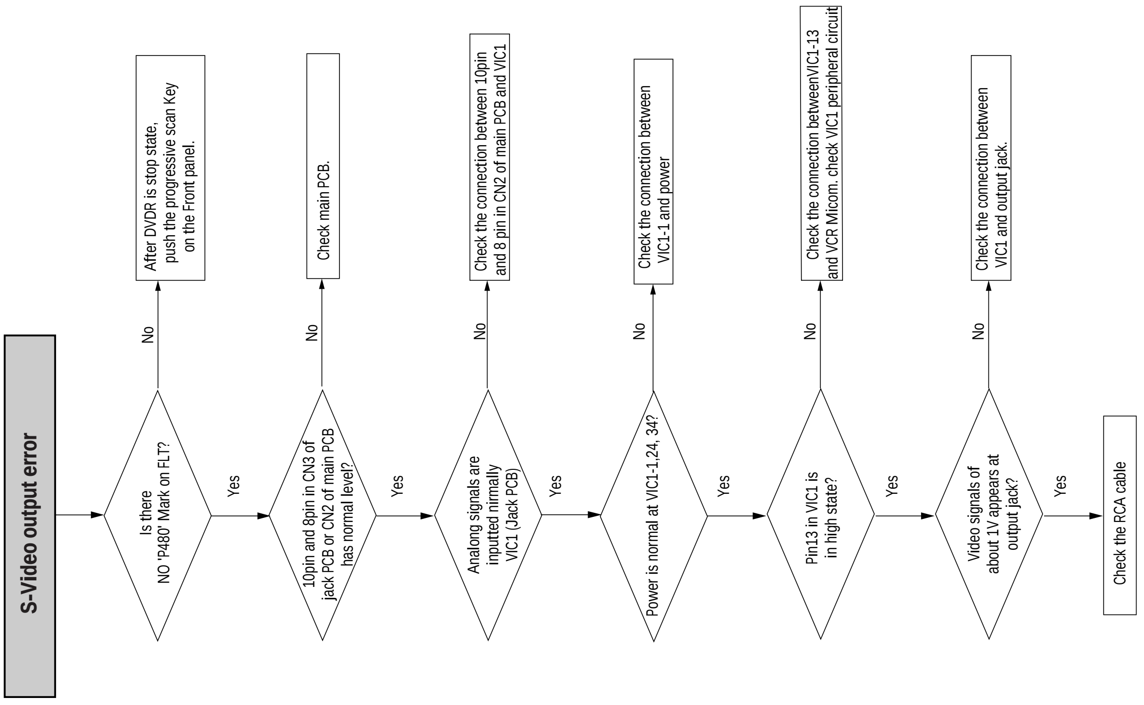
No audio on line input mode or recorded disc playback


Check select signal of pin44, 46, 56, 58 in IC801 (jack board)
No
check pin63, 64 (input select)of IC801
Yes
Check pin62 of IC801,pin18 of MCON2,and pin16 of MCON2 in jack board
No
Check SMPS board
Yes
Check all the vcc of AIC9,AIC81,AIC82 (main board)
No
Replace main PCB
Yes
Check digital clock of pin10,11,12,15
No
Yes
Check passive components around jack-pin and IC801

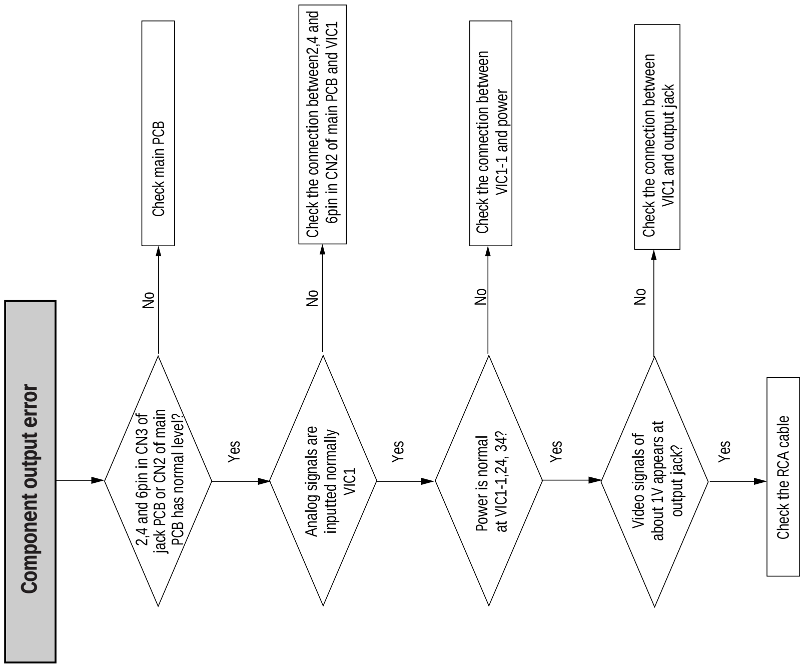
CVBS output error


Is there NO 'P480' Mark on FLT?
No
After DVDR is stop state, push the progressive scan Key on the Front panel.
Yes
12pin in CN3 of jack PCB or CN2 of main PCB has normal level?
No
Check main PCB
Yes
Analog signals are inputed normally VIC1
No
Check the connection between 12pin in CN2 OF main PCB and VIC1
Yes
Power is normal at VIC1-1,24, 34? (jack PCB)
No
Check the connection between VIC1-1 and power
Yes
Pin13 in VIC1 is in high state?
No
Check the connection between VIC1-13 and VCR Micom. check VIC1 peripheral circuit
Yes
Video signal of about 1V appears at output jack?
No
Check the connection between VIC1 and output jack
Yes
Check the RCA cable

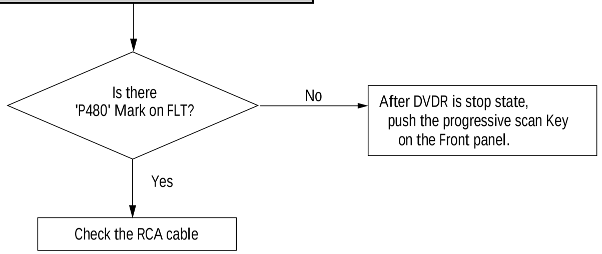
S-Video output error


S-Video output error
Is there NO "P480" Mark on FLT?
No
After DVDR is stop state, push the progressive scan Key on the Front panel.
Yes
10pin and 8pin in CN3 of jack PCB or CN2 of main PCB has normal level?
No
Check main PCB.
Yes
Analong signals are inputted nirmally VIC1 (Jack PCB)
No
Check the connection between 10pin and 8 pin in CN2 of main PCB and VIC1
Yes
Power is normal at VIC1-1,24, 34?
No
Check the connection between VIC1-1 and power
Yes
Pin13 in VIC1 is in high state?
No
Check the connection betweenVIC1-13 and VCR Micom. check VIC1 peripheral circuit
Yes
Video signals of about 1V appears at output jack?
No
Check the connection between VIC1 and output jack.
Yes
Check the RCA cable

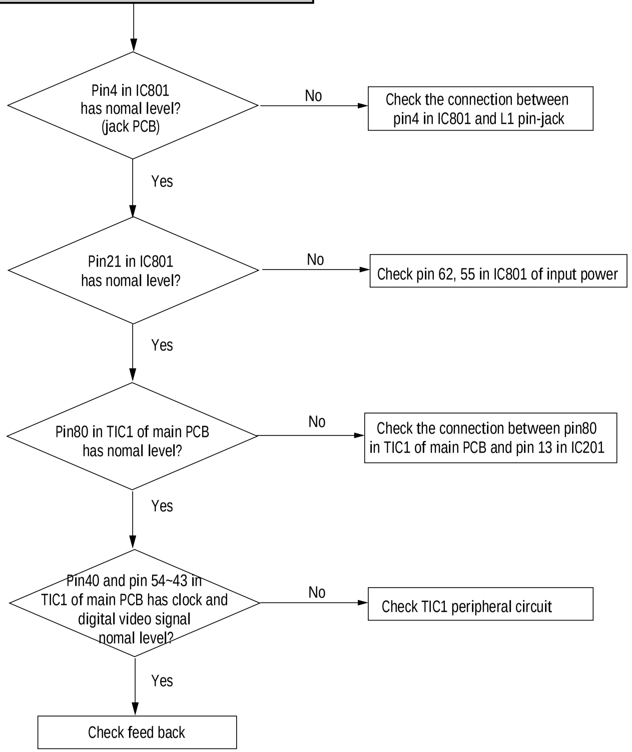
Component output error


Component output error
2,4 and 6pin in CN3 of jack PCB or CN2 of main PCB has normal level?
No
Check main PCB
Yes
Analog signals are inputted normally VIC1
No
Check the connection between2,4 and 6pin in CN2 of main PCB and VIC1
Yes
Power is normal at VIC1-1,24, 34?
No
Check the connection between VIC1-1 and power
Yes
Video signals of about 1V appears at output jack?
No
Check the connection between VIC1 and output jack
Yes
Check the RCA cable

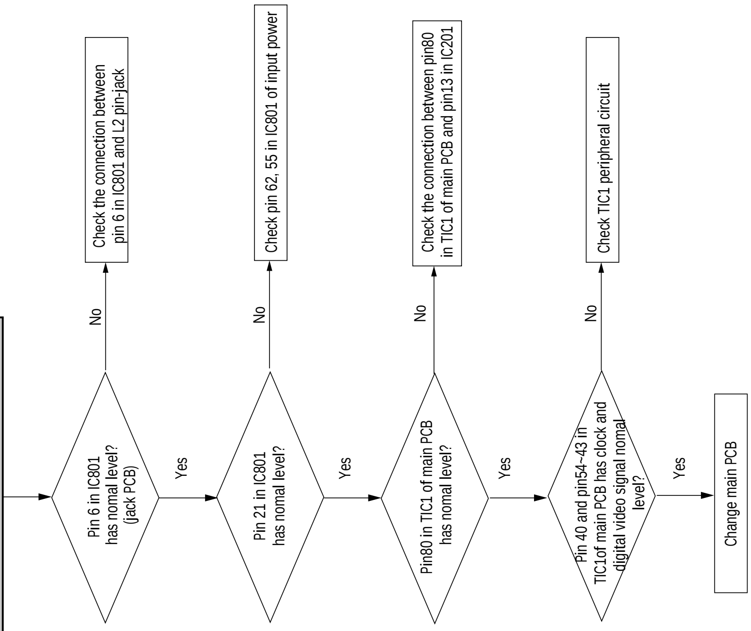
Progressive output error


Is there
'P480' Mark on FLT?
No
After DVDR is stop state,
push the progressive scan Key
on the Front panel.
Yes
Check the RCA cable

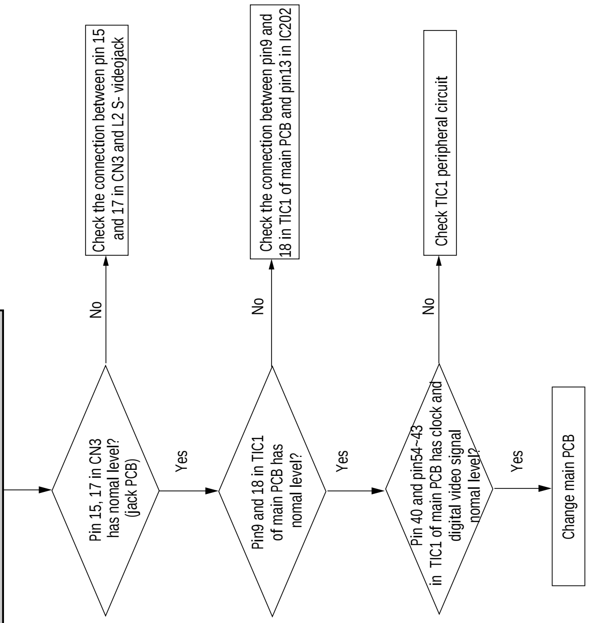
Line1 CVBS Video Input Error


Pin4 in IC801
has nomal level?
(jack PCB)
No
Check the connection between
pin4 in IC801 and L1 pin-jack
Yes
Pin21 in IC801
has nomal level?
No
Check pin 62, 55 in IC801 of input power
Yes
Pin80 in TIC1 of main PCB
has nomal level?
No
Check the connection between pin80
in TIC1 of main PCB and pin 13 in IC201
Yes
Pin40 and pin 54~43 in
TIC1 of main PCB has clock and
digital video signal
nomal level?
No
Check TIC1 peripheral circuit
Yes
Check feed back

Line2 CVBS Video Input Error


Pin 6 in IC801 has nomal level? (jack PCB)
No
Check the connection between pin 6 in IC801 and L2 pin-jack
Yes
Pin 21 in IC801 has nomal level?
No
Check pin 62, 55 in IC801 of input power
Yes
Pin80 in TIC1 of main PCB has nomal level?
No
Check the connection between pin80 in TIC1 of main PCB and pin13 in IC201
Yes
Pin 40 and pin54~43 in TIC1of main PCB has clock and digital video signal nomal level?
No
Check TIC1 peripheral circuit
Yes
Change main PCB

Line2 S-Video Video Input Error


Pin 15, 17 in CN3 has nomal level? (jack PCB)
No
Check the connection between pin 15 and 17 in CN3 and L2 S- videojack
Yes
Pin9 and 18 in TIC1 of main PCB has nomal level?
No
Check the connection between pin9 and 18 in TIC1 of main PCB and pin13 in IC202
Yes
Pin 40 and pin54~43 in TIC1 of main PCB has clock and digital video signal nomal level?
No
Check TIC1 peripheral circuit
Yes
Change main PCB

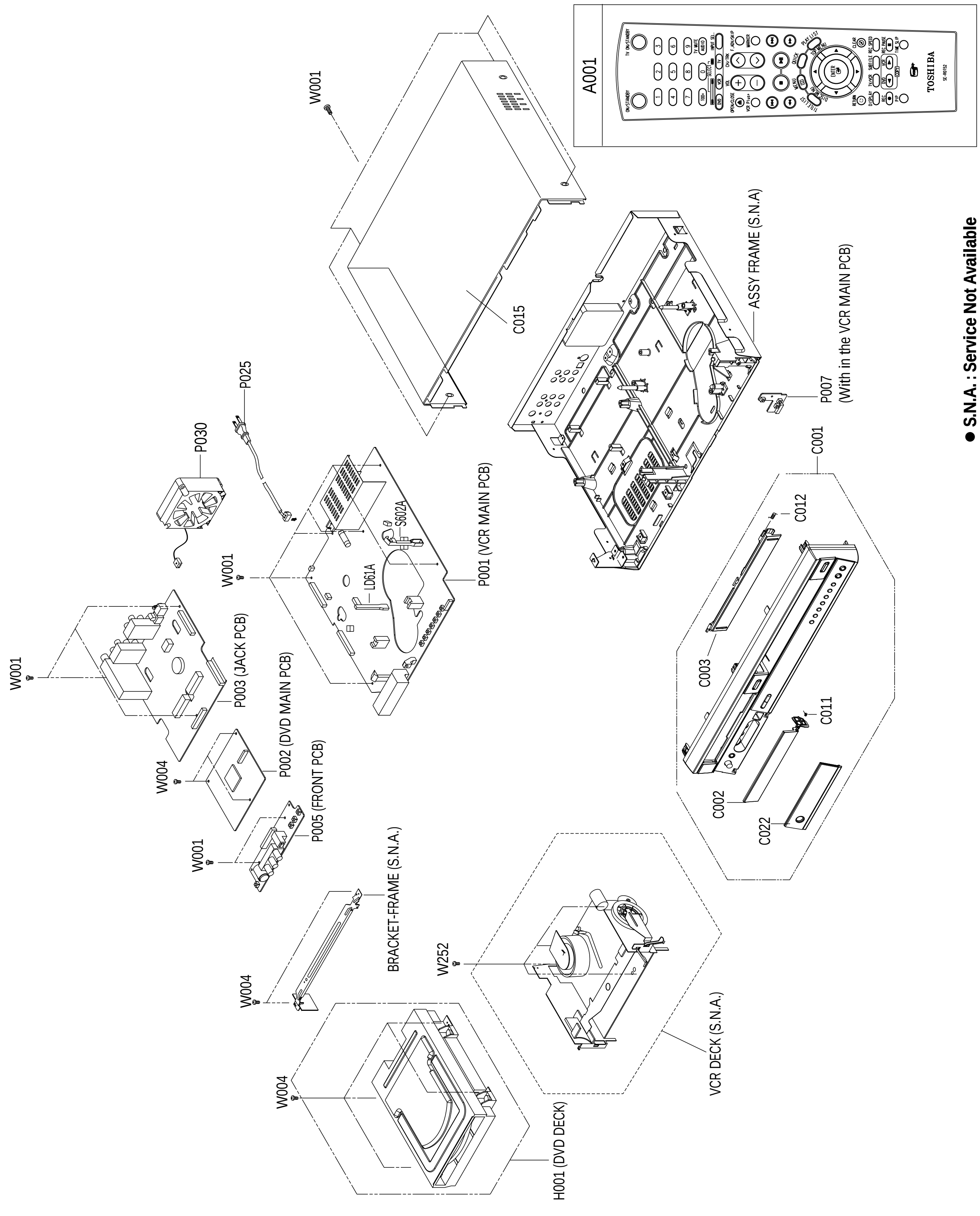
10. Exploded View and Parts List

10-1 Cabinet Assembly - 10-2

10-2 VCR Mechanical Parts (Top Side)- 10-4

10-3 VCR Mechanical Parts (Bottom Side) - 10-6

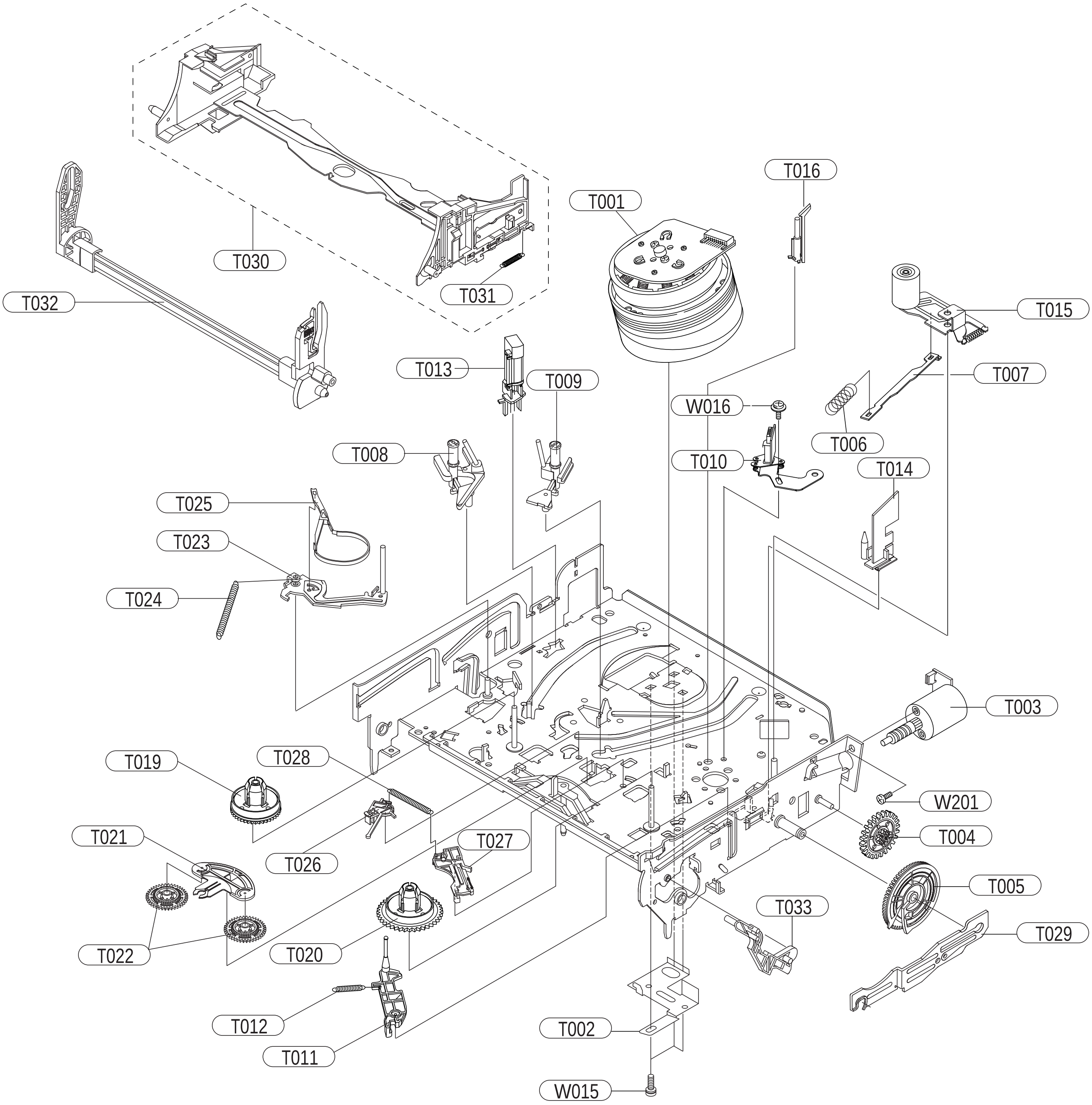
10-1 Cabinet Assembly


A001
TOSHIBA
W001
C015
ASSY FRAME (S.N.A)
P007
(With in the VCR MAIN PCB)
C001
C012
C003
C011
C002
C022
P025
P030
W001
S802A
LD61A
P001 (VCR MAIN PCB)
W001
P003 (JACK PCB)
W004
P002 (DVD MAIN PCB)
W001
P005 (FRONT PCB)
BRACKET-FRAME (S.N.A.)
W004
W252
W004
H001 (DVD DECK)
VCR DECK (S.N.A.)

● **S.N.A. : Service Not Available**

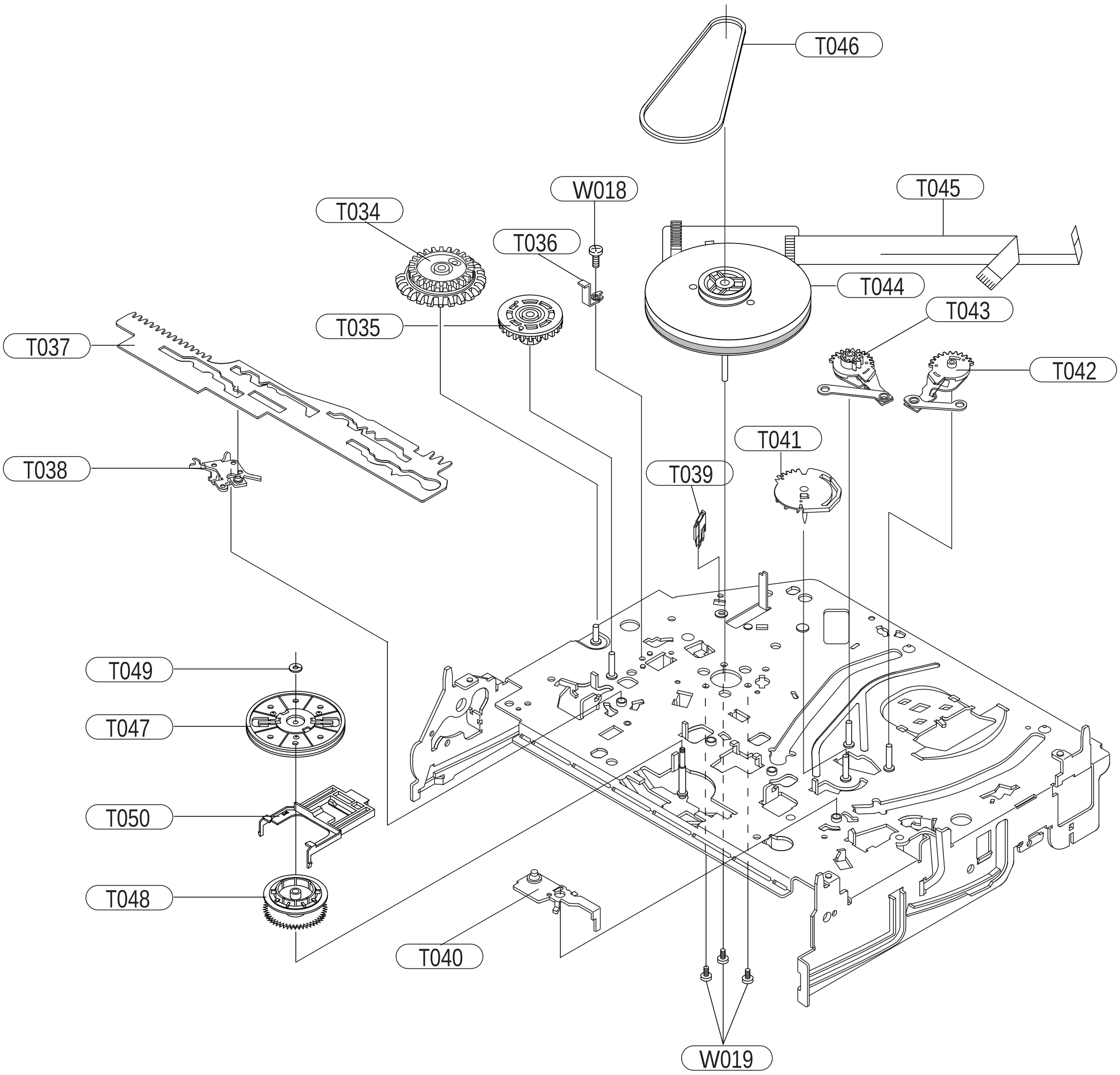
Loc. No	Reference No.	TSB Parts No.	Description ; Specification	Remark
A001	AK59-00028A	BY731642	REMOCON-ASSY;D-VR3TU/TSB,SEC,187.5*54,-,	
C001	AK97-01014A	BY630395	ASSY-PANEL FRONT;HIPS94V2,D-VR3,04-TSBRC	
C002	AK64-00823A	BY731621	DOOR-TRAY;D-VR3,ABS 94HB,T2.5,H26.6,W139	
C003	AK64-00822A	BY731618	DOOR-CASSETTE;D-VR3,ABS 94HB,T2.5,H26.6,	
C011	AK64-00334A	BY734041	DOOR-SPRING;DVD-V3500,SWPB,,,,-,,	
C012	AC61-62032A	BY730093	SPRING ETC-MASK;SV-C130,SUS,4.4,-,-,-,-,	
C015	AK64-00621A	BY731610	CABINET-TOP;DVD-VR300,PCM,T0.6,W596,L309	
C022	AK64-00824A	BY731619	DOOR-FRONT;D-VR3,ABS 94HB,T1.5,H34,W124.	
H001	AK97-00570A	BY630399	ASSY-RECORDER DECK;-,DP-R1,ASSY RECORDER	
LD61A	AC61-00340A	BY530080	HOLDER-LED;X-11,POM(K300),-,-,-,NTR,-	
P001	AK92-00391B	BY630382	ASSY PCB-MAIN VCR;D-VR3TU/TSB,TOSHIBA,DV	
P002	AK92-00429B	BY630421	ASSY PCB-MAIN DVD;D-VR3TU/TSB,TOSHIBA,DV	
P003	AK94-00015A	BY630385	ASSY SORT-JACK;DVD-VR300,VCR+DVD RECODER	
P005	AK94-00020A	BY630384	ASSY SORT-FUNCTION;DVD-VR300,004-SECREC4	
P007	AK97-01041A	BY630386	ASSY SORT-KEY;D-VR3-S-TU,DVD RECORDER-VC	
P025	AC39-10200N	BY634046	CBF-POWER CORD;AT,US,EP2/Y,HOUSING(2P),1	
P030	3103-001152	BY731622	FAN-DC;DC 12.0V,110mA,1700rpm,0.581m^	
S602A	AC61-00341A	BY530081	HOLDER-TR;X-11,POM(K300),-,-,-,NTR,-	
W001	6003-000275	22797137	SCREW-TAPTITE;BH,+,B,M3,L10,BLK ,SWCH101	
W004	6003-000283	22797145	SCREW-TAPTITE;BH,+,B,M3,L8,ZPC(YEL),SWRC	
W252	AC60-12126A	70790218	SCREW-MACHINE;-,-,FE,FZY,BH,-,-,4*12,-,-	
	AC39-00073A	BY634819	CABLE-RCA;SJ01-08-099,1.2MT,3P,A/V,30A,5	
	AC39-42001J	BY634274	CABLE-RF ASSY;-,-,,#1365,1200mm,3A,110V,C	
	AK68-00486A	BY634781	MANUAL USERS;D-VR3TU/TSB,TOSHIBA,ENGLISH	D-VR3SU Only
	AK68-00487A	BY634782	MANUAL USERS;D-VR3TC/TSB,TOSHIBA,ENG,FRE	D-VR3SC Only
	AK68-00567A	BY634874	MANUAL USERS;D-VKR3TU/TSB,TOSHIBA,ENGLISH	D-VKR3SU Only

10-2 VCR Mechanical Parts (Top Side)


T016
T001
T030
T031
T032
T015
T013
T009
T007
W016
T006
T008
T010
T014
T025
T023
T024
T003
T019
T028
W201
T004
T021
T027
T026
T005
T033
T029
T022
T020
T012
T002
T011
W015

Loc. No	Reference No.	TSB Parts No.	Description ; Specification	Remark
T001	AC97-02191A	BY630388	ASSY-CYLINDER;6ANJ(Alps Head),CX11-DS,Fo	
T002	AC70-00002A	BY731640	PLATE-GND DECK;X-11,SPTE,T0.3,-,-,-,-	
T003	AC31-00018A	BY631184	MOTOR-LOADING ASSY;-,SCORPIO2(TS-10A),-,	
T004	AC66-00008A	BY730743	GEAR-WORM WHEEL;TS-10,POM,0.8,40,-,NAT,3	
T005	AC66-00011A	BY730745	GEAR-FL CAM;TS-10,POM,0.8,59,-,BLK,48.48	
T006	AC61-00105A	BY730723	SPRING ETC-PINCH DRIVE;TS-10,SUS304-WPB,	
T007	AC61-30180A	BY730244	PLATE-JOINT;X-9,SECC20/20,T0.8,-,-,-,-	
T008	AC66-80142A	BY730124	SLIDER-SUPPLY ASSY;X-9,SUS,-,-,-,SIL,-	
T009	AC66-80141A	BY730123	SLIDER-TAKE UP ASSY;X-9,SUS,-,-,-,SIL,-	
T010	AC97-01655A	BY630391	ASSY-HEAD ACE;-,SCORPIO2(TS-10A),HVMXA11	
T011	AC66-00074A	BY731526	LEVER-GUIDE(#9);TS-9,PPS,-,-,-,-,BLK,KHA	
T012	AC61-60553A	BY730088	SPRING ETC-GUIDE 9;X-9,SUS304-WPB,0.25,-	
T013	AC33-00015A	BY634836	HEAD-FE;HVFHP0050A,PBT3300,2PIN,NATURA	
T014	AC66-00083A	BY731636	LEVER-FL DOOR;X-11,POM(K300),-,-,-,-,BLU	
T015	AC97-02293A	BY731528	ASSY-UNIT PINCH;SECC+SUS304,TS-10,FOR X-	
T016	AC97-02215A	BY630397	ASSY-POST #8 GUIDE;SUS303+POM(M90-44)EQ,	
T019	AC66-10267A	BY730102	REEL-DISK S;X-9,POM,-,-,-,-,-,-	
T020	AC66-10268A	BY730103	REEL-DISK T;X-9,POM,-,-,-,-,-,-	
T021	AC66-30524A	BY730112	LEVER-IDLER;-,POM,-,-,-,-,BLK,-	
T022	AC66-00039A	BY730760	GEAR-IDLE;TS-10,PET K3372,0.5,-,-,NTR,28	
T023	AC66-00035A	BY730759	LEVER-TENSION ASS'Y;TS-10,SECC E20/20+SU	
T024	AC61-00107A	BY730725	SPRING ETC-TENSION LEVER;TS-10,SUS304-WP	
T025	AC69-00104A	BY730762	BAND-BRAKE ASS'Y;TS-10,-,-,-,-,-,-	
T026	AC66-30550A	BY730121	LEVER-S.BRAKE ASSY;-,POM+SUS,-,-,-,X-9	
T027	AC66-30549A	BY730120	LEVER-T.BRAKE ASSY;-,POM+SUS,-,-,-,X-9	
T028	AC61-00106A	BY730724	SPRING ETC-BRAKE;TS-10,SUS304-WPB,-,-,-,	
T029	AC66-00020A	BY730750	SLIDER-FL DRIVE;TS-10,SECC ,T1.0,-,-,SIL	
T030	AC97-02323A	BY731660	ASSY-HOLDER FL CASSETTE;SECC+POM,X-11,Fo	
T031	AC61-60561A	BY730091	SPRING ETC-FL.LEVER-LR;X-9,SUS304 WPB,OD	
T032	AC97-02324A	BY731661	ASSY-LEVER FL ARM;SECC+POM,X-11,For X-11	
T033	AC61-50658A	BY730086	GUIDE-CASS. DOOR;X-9,POM,-,-,-,NTR	
W015	6006-001092	BY634416	SCREW-MACHINE;WS,PH,+,M3.0,L6.0,ZPC(YEL)	
W016	6006-001154	BY731647	SCREW-TAPTITE;WSP,PH,+,M2.6,L5.6,ZPC(YEL	
W201	6001-001711	BY731536	SCREW-MACHINE;PH,+,M3,L3.3,ZPC(YEL)	

10-3 VCR Mechanical Parts (Bottom Side)


T046
T045
W018
T034
T036
T044
T043
T035
T037
T042
T041
T038
T039
T049
T047
T050
T048
T040
W019

Loc. No	Reference No.	TSB Parts No.	Description ; Specification	Remark
T034	AC66-00076A	BY731626	GEAR-JOINT 1;X-11,POM(K300),-,-,-,BLUE,-	
T035	AC66-00077A	BY731627	GEAR-JOINT 2;X-11,POM(K300),-,-,-,BLUE,-	
T036	AC61-00338A	BY731599	BRACKET-GEAR;X-11,SECC,T0.8,W20,L20,NTR,	
T037	AC66-00075A	BY731651	SLIDER-CAM;X-11,SECC ,T1.2,-,-,SIL,-	
T038	AC66-00017A	BY730748	LEVER-PINCH DRIVE;TS-10,SECC E20/20,1.0	
T039	AC70-00003A	BY634837	HOOK-CAPSTAN;-,-,L10,W10,H10,POM(M90-44)	
T040	AC66-00016A	BY730747	LEVER-TENSION DRIVE;TS-10,SECC E20/20,1	
T041	AC66-00078A	BY731628	GEAR-LOADING DRIVE;X-11,POM(K300),-,-,-,	
T042	AC97-02195A	BY630393	ASSY-LEVER LOADING S;SECC+POM+SUS,X-11,F	
T043	AC97-02196A	BY630394	ASSY-LEVER LOADING T;SECC+POM+SUS,X-11,F	
T044	AC81-00002A	BY731637	MOTOR-CAPSTAN;THRUST END PLAY-0.2,MR-FG	
T045	3809-001270	BY634670	CABLE-FLAT;30V,80C,140MM,10P,1.25MM,UL28	
T046	AC66-60051A	BY730122	BELT-PULLEY;-,5CM-70,2 * 2,-,71.3,-,X-9	
T047	AC61-21012A	BY730084	HOLDER-CLUTCH ASSY;X-9,ABS,-,-,-,BLK,-	
T048	AC66-20581A	BY730111	GEAR-CENTER ASSY;X-9,POM,M=O.5,-,-,GRY,-	
T049	AC60-30306A	BY730076	FASTENER-WASHER SLIT;-,-,ID2.1,OD5.0,T0.	
T050	AC66-00006A	BY730742	LEVER-UP DOWN;TS-10,POM,-,-,-,-,NAT,-	
W018	6003-001450	BY731520	SCREW-TAPTITE;PH,+,S,M2.6,L5,ZPC(YEL)	
W019	6003-000108	BY731519	SCREW-TAPTITE;BH,+,B,M2.6,L6,ZPC(YEL),SW	

11. Electrical Parts List

Loc.No	Reference No	TSB Part No	Description ; Specification	Remark
P001	**AK92-00391B**	**BY630382**	**ASSY PCB-MAIN VCR;D-VR3TU/TSB,TOSHIBA,DV**	
S.M.P.S PARTS				
BD01	0402-001608	BY430109	DIODE-BRIDGE;GBJ2J,600V,2A,SIP-4,BK	
BD1S01	AC27-92001M	70795644	COIL-INDUCTOR;RH3.5X6.5RS,BEAD(RADIAL),-	
C1S01	2401-003365	BY130500	C-AL;150uF,20%,200V,GP,TP,18x25,7.5	
⚠ C1S02	2201-000963	BY130161	C-CERAMIC,DISC;1NF,20%,400V,Y5U,TP,9.5X6	
⚠ C1S03	2201-000963	BY130161	C-CERAMIC,DISC;1NF,20%,400V,Y5U,TP,9.5X6	
⚠ C1S04	2301-001711	BY130491	C-FILM,LEAD;220nF,##20%,275V,BK,17.5*10*	
⚠ C1S05	2301-001711	BY130491	C-FILM,LEAD;220nF,##20%,275V,BK,17.5*10*	
⚠ C1S06	2201-000987	BY130164	C-CERAMIC,DISC;2.2NF,20%,400V,Y5U,BK,12.	
C1S07	2201-000012	BY130519	C-CERAMIC,DISC;0.22NF,10%,1KV,Y5P,TP,6.3	
C1S08	2305-001029	BY130226	C-FILM,LEAD-PEF;10nF,10%,630V,TP,12x9x12	
C1S09	2401-002608	BY130473	C-AL;33uF,20%,35V,GP,TP,5x11,5	
C1S10	2401-002608	BY130473	C-AL;33uF,20%,35V,GP,TP,5x11,5	
C1S11	2401-000598	BY130042	C-AL;1uF,20%,50V,GP,TP,4x7,5	
C1S12	2305-001029	BY130226	C-FILM,LEAD-PEF;10nF,10%,630V,TP,12x9x12	
C1S30	2401-003390	BY130501	C-AL;2200uF,20%,16V,LZ,TP,13x31.5,5	
C1S31	2401-003390	BY130501	C-AL;2200uF,20%,16V,LZ,TP,13x31.5,5	
C1S32	2401-000385	70795431	C-AL;10uF,20%,100V,GP,TP,6.3x11,5	
C1S33	2401-000717	BY130493	C-AL;2200uF,20%,25V,WT,TP,12.5x25,5	
C1S34	2401-001126	BY130045	C-AL;330uF,20%,25V,WT,TP,10x12.5,5	
C1S37	2401-001479	BY130015	C-AL;470UF,20%,10V,GP,TP,6.3*11MM,-	
C1S38	2401-001479	BY130015	C-AL;470UF,20%,10V,GP,TP,6.3*11MM,-	
C1S39	2301-000129	70796098	C-FILM,LEAD-PEF;100nF,5%,50V,TP,10X9X4.3	
C1S41	2401-001126	BY130045	C-AL;330uF,20%,25V,WT,TP,10x12.5,5	
CN1S01	3711-000203	BY634858	CONNECTOR-HEADER;1WALL,2P,1R,7.92MM,STRA	
D1S05	0402-000012	BY430047	DIODE-RECTIFIER;UF4007,1KV,1A,DO-41,TP	
D1S06	0401-000005	BY430017	DIODE-SWITCHING;1N4148,75V,150MA,DO-35,T	
D1S07	0402-001195	BY430011	DIODE-RECTIFIER;F1T4,400V,1A,DO-204AC,TP	
D1S30	0404-001225	BY430112	DIODE-SCHOTTKY;SRAF560,60V,5000mA,ITO-22	
D1S31	0404-001225	BY430112	DIODE-SCHOTTKY;SRAF560,60V,5000mA,ITO-22	
D1S32	0404-001225	BY430112	DIODE-SCHOTTKY;SRAF560,60V,5000mA,ITO-22	
D1S33	0404-001225	BY430112	DIODE-SCHOTTKY;SRAF560,60V,5000mA,ITO-22	
D1S34	0402-001195	BY430011	DIODE-RECTIFIER;F1T4,400V,1A,DO-204AC,TP	
D1S35	0402-001194	BY430010	DIODE-RECTIFIER;SHG2D,200V,2A,-,TP	
D1S37	0402-001195	BY430011	DIODE-RECTIFIER;F1T4,400V,1A,DO-204AC,TP	
⚠ F1S01	3601-001122	70795420	FUSE-CARTRIDGE;250V,1.6A,FAST-ACTING,GLA	
⚠ IC1S01	1203-002805	BY631237	IC-PWM CONTROLLER;ICE2BS01,PDIP,8P,9.52X	
⚠ IC1S02	0604-001028	BY530004	PHOTO-COUPLER;TR,50-600%,250mW,DIP-4,ST	
IC1S03	AC14-12006D	70795271	IC;KA431Z,TO-92,TAPING	
⚠ L1S02	AK29-00002A	BY330083	FILTER EMI;RECORDER,SQ2222,20mH,1	
L1S30	AH27-00039A	BY330081	COIL CHOKE;DR CHOKE(8*6),DVD-R2000,22uH,	
L1S31	AH27-00039A	BY330081	COIL CHOKE;DR CHOKE(8*6),DVD-R2000,22uH,	
L1S32	AC27-12001N	70796213	COIL CHOKE;10UH-15%,RA,K-30,Q80,150KHZ,-	
⚠ PT1SD1	AC26-00013H	BY330085	TRANS SWITCHING;EER-4032,REC COMBO,-,-,-	
Q1S01	0505-001729	BY530077	FET-SILICON;SPA04N60C3,N,600V,4.5A,0.85O	
R1S02	2006-000273	70796087	R-CEMENT;27KOHM,5%,2W,CA,BK,6.4X6.5X18M	
R1S03	2006-000273	70796087	R-CEMENT;27KOHM,5%,2W,CA,BK,6.4X6.5X18M	
R1S04	2006-000262	BY230170	R-CEMENT;2.7ohm,10%,2W,CB,TP,7.5x11x20.	
R1S05	2001-000546	BY230318	R-CARBON;270KOHM,5%,1/4W,AA,TP,2.4X6.4M	
R1S06	2001-000869	BZ230057	R-CARBON;56OHM,5%,1/8W,AA,TP,1.8X3.2MM	
R1S07	2001-000546	BY230318	R-CARBON;270KOHM,5%,1/4W,AA,TP,2.4X6.4M	
R1S08	2001-000546	BY230318	R-CARBON;270KOHM,5%,1/4W,AA,TP,2.4X6.4M	
R1S09	2001-000598	70795320	R-CARBON;3.3OHM,5%,1/8W,AA,TP,1.8X3.2MM	
R1S10	2001-000281	70795004	R-CARBON;100OHM,5%,1/8W,AA,TP,1.8X3.2MM	
R1S11	2001-000449	70795020	R-CARBON;2.2KOHM,5%,1/8W,AA,TP,1.8X3.2M	
R1S12	2001-000527	70795018	R-CARBON;22OHM,5%,1/8W,AA,TP,1.8X3.2MM	
R1S13	2005-001198	BY230337	R-WIRE WOUND,NON;0.18ohm,1%,1W,AA,TP,4.3	
R1S14	2001-000290	70795006	R-CARBON;10KOHM,5%,1/8W,AA,TP,1.8X3.2MM	
R1S15	2001-000096	BY230036	R-CARBON(S);1MOHM,5%,1/2W,AA,TP,2.4X6.4M	
R1S31	2001-000780	70795039	R-CARBON;470OHM,5%,1/8W,AA,TP,1.8X3.2MM	
R1S32	2001-000221	BY230019	R-CARBON;1.2KOHM,5%,1/8W,AA,TP,1.8X3.2M	
R1S33	2001-000429	70795005	R-CARBON;1KOHM,5%,1/8W,AA,TP,1.8X3.2MM	
R1S35	2001-000214	70795603	R-CARBON;1.1KOHM,5%,1/8W,AA,TP,1.8X3.2M	
R1S36	2007-000515	BY230356	R-CHIP;2.7Kohm,1%,1/8W,TP,2012	
R1S37	2003-000148	BY230003	R-METAL OXIDE;100ohm,5%,2W,AE,TP,6x16mm	
ZD1S01	0403-001318	BY430107	DIODE-ZENER;MTZJ4.3B,4.17-4.43V,500MW,DO	
ZD1S02	0403-000713	BY430110	DIODE-ZENER;MTZJ20B,18.63-17.7V,500MW,DO	
POWER DRIVER PARTS				
C1P103	2401-002144	BY130049	C-AL;47uF,20%,16V,GP,TP,5x11,5	
C1P104	2401-002144	BY130049	C-AL;47uF,20%,16V,GP,TP,5x11,5	
C1P105	2401-002144	BY130049	C-AL;47uF,20%,16V,GP,TP,5x11,5	
C1P107	2401-000303	70795779	C-AL;100uF,20%,25V,GP,TP,6.3x11,5	
C1P108	2401-000303	70795779	C-AL;100uF,20%,25V,GP,TP,6.3x11,5	
C1P109	2401-001730	70795625	C-AL;10UF,20%,50V,GP,TP,5X11,5	
C1P110	2401-003480	BY130339	C-AL;1000UF,20%,10V,LZ,TP,10X16MM,5	
C1P121	2401-001250	70796211	C-AL;4.7uF,20%,35V,GP,TP,4x5,5	
C1P122	2401-000598	BY130042	C-AL;1uF,20%,50V,GP,TP,4x7,5	
C1P123	2401-001730	70795625	C-AL;10UF,20%,50V,GP,TP,5X11,5	
C1P124	2401-001250	70796211	C-AL;4.7uF,20%,35V,GP,TP,4x5,5	
C1P125	2401-000414	BY130273	C-AL;10uF,20%,16V,GP,TP,4x7,5	
C1P126	2401-000414	BY130273	C-AL;10uF,20%,16V,GP,TP,4x7,5	
C1P127	2401-001250	70796211	C-AL;4.7uF,20%,35V,GP,TP,4x5,5	
C1P128	2401-002144	BY130049	C-AL;47uF,20%,16V,GP,TP,5x11,5	
C1P129	2401-002144	BY130049	C-AL;47uF,20%,16V,GP,TP,5x11,5	
D1P101	0401-000005	BY430017	DIODE-SWITCHING;1N4148,75V,150MA,DO-35,T	
D1P102	0401-000005	BY430017	DIODE-SWITCHING;1N4148,75V,150MA,DO-35,T	
D1P103	0401-000005	BY430017	DIODE-SWITCHING;1N4148,75V,150MA,DO-35,T	
D1P104	0402-001194	BY430010	DIODE-RECTIFIER;SHG2D,200V,2A,-,TP	
D1P105	0402-000127	70796385	DIODE-RECTIFIER;1N4002,100V,1A,DO-41,TP	
D1P106	0402-000127	70796385	DIODE-RECTIFIER;1N4002,100V,1A,DO-41,TP	
D1P107	0402-000127	70796385	DIODE-RECTIFIER;1N4002,100V,1A,DO-41,TP	
D1P108	0402-000127	70796385	DIODE-RECTIFIER;1N4002,100V,1A,DO-41,TP	
IC1P01	1203-000242	BY530068	IC-POSI.FIXED REG.;7812,TO-220,3P,-,PLAS	
IC1P02	AC14-12006N	70796345	IC-VOLT REGU;KA78R12,SIP,STICK	
IC1P03	1203-003230	BY631243	IC-POSI.FIXED REG.;G9105,TO-220F,4P,10.1	
IC1P05	1203-003293	BY631244	IC-POSI.FIXED REG.;G9205,TO-220F,4P,10.1	
IC1P06	1203-003230	BY631243	IC-POSI.FIXED REG.;G9105,TO-220F,4P,10.1	
L1P02	2701-000002	BY330009	INDUCTOR-AXIAL;100UH,10%,4298	
L1P101	2701-000002	BY330009	INDUCTOR-AXIAL;100UH,10%,4298	
Q1P103	0505-001565	BY530076	FET-SILICON;GFP50N03,N,30V,50A,20MOHM,62	
Q1P105	0501-000362	BY530008	TR-SMALL SIGNAL;KSC2328A-Y,NPN,1000MW,TO	
Q1P106	0504-000142	70693084	TR-DIGITAL;KSR2001,PNP,300MW,4.7K/4.7K,T	
Q1P107	0501-000398	70795136	TR-SMALL SIGNAL;KSC945,NPN,250mW,TO-92,T	
Q1P108	0501-000362	BY530008	TR-SMALL SIGNAL;KSC2328A-Y,NPN,1000MW,TO	
Q1P109	0501-000362	BY530008	TR-SMALL SIGNAL;KSC2328A-Y,NPN,1000MW,TO	
Q1P110	0501-000362	BY530008	TR-SMALL SIGNAL;KSC2328A-Y,NPN,1000MW,TO	
R1P102	2001-000008	70795014	R-CARBON;15KOHM,5%,1/8W,AA,TP,1.8X3.2MM	
R1P103	2001-000734	70795040	R-CARBON;4.7KOHM,5%,1/8W,AA,TP,1.8X3.2M	
R1P107	2001-000429	70795005	R-CARBON;1KOHM,5%,1/8W,AA,TP,1.8X3.2MM	
R1P121	2001-000362	70796067	R-CARBON;150OHM,5%,1/8W,AA,TP,1.8X3.2MM	
R1P122	2001-000449	70795020	R-CARBON;2.2KOHM,5%,1/8W,AA,TP,1.8X3.2M	
R1P123	2001-000290	70795006	R-CARBON;10KOHM,5%,1/8W,AA,TP,1.8X3.2MM	
R1P124	2001-000062	70796173	R-CARBON;470OHM,5%,1/4W,AA,TP,2.4X6.4MM	
R1P131	2001-000855	BY230025	R-CARBON;560OHM,5%,1/4W,AA,TP,2.4X6.4MM	
ZD1P02	0403-001211	BY430015	DIODE-ZENER;MTZJ12B,11.8-12.3V,500MW,DO-	
ZD1P03	0403-000720	BY430013	DIODE-ZENER;MTZJ9.1B,8.57-9.01V,500MW,DO	
ZD1P04	0403-000717	BY430005	DIODE-ZENER;MTZJ5.1B,4.94-5.2V,500MW,DO-	

Loc.No	Reference No	TSB Part No	Description ; Specification	Remark
SYSTEM CONTROL/SERVO PARTS				
C602	2203-000257	BY130440	C-CER,CHIP;10nF,10%,50V,X7R,TP,1608	
C603	2203-005065	BY130479	C-CER,CHIP;1000nF,+80-20%,10V,Y5V,-,1608	
C604	2203-000257	BY130440	C-CER,CHIP;10nF,10%,50V,X7R,TP,1608	
C605	2401-000360	BY130317	C-AL;100uF,20%,50V,GP,TP,8x11.5,5	
C606	2203-000257	BY130440	C-CER,CHIP;10nF,10%,50V,X7R,TP,1608	
C607	2203-000257	BY130440	C-CER,CHIP;10nF,10%,50V,X7R,TP,1608	
C608	2401-002165	BY130280	C-AL;100uF,20%,16V,GP,TP,6.3x7,5	
C609	2203-002398	BY130454	C-CER,CHIP;22nF,10%,50V,X7R,TP,1608	
C610	2203-000975	BY130484	C-CER,CHIP;47nF,10%,25V,X7R,TP,1608,-	
C611	2203-000783	BY130435	C-CER,CHIP;0.33NF,5%,50V,C0G,TP,1608	
C613	2401-003107	BY130282	C-AL;47uF,20%,16V,GP,TP,5x7,5	
C614	2203-000257	BY130440	C-CER,CHIP;10nF,10%,50V,X7R,TP,1608	
C615	2203-000257	BY130440	C-CER,CHIP;10nF,10%,50V,X7R,TP,1608	
C616	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
C617	2401-001492	BY130497	C-AL;47uF,20%,16V,GP,-,5x7mm,2.5	
C618	2203-000552	BY130522	C-CER,CHIP;0.02NF,5%,50V,C0G,TP,1608	
C619	2203-000552	BY130522	C-CER,CHIP;0.02NF,5%,50V,C0G,TP,1608	
C620	2007-000070	BY230274	R-CHIP;0ohm,5%,1/10W,TP,1608	
C622	2203-005065	BY130479	C-CER,CHIP;1000nF,+80-20%,10V,Y5V,-,1608	
C623	2202-000121	BY130069	C-CERAMIC,MLC-AXIAL;100pF,10%,50V,Y5P,TP	
C624	2401-002165	BY130280	C-AL;100uF,20%,16V,GP,TP,6.3x7,5	
C625	2202-000797	70795075	C-CERAMIC,MLC-AXIAL;10NF,30%,16V,Y5S,TP,	
C626	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
C627	2203-001697	BY130487	C-CER,CHIP;0.082nF,5%,50V,NP0,TP,1608	
C628	2401-001168	BY130495	C-AL;33uF,20%,16V,GP,TP,6.3x5,2.5mm	
C629	2203-005221	BY130467	C-CER,CHIP;15nF,10%,50V,X7R,TP,1608,-	
C630	2401-001492	BY130497	C-AL;47uF,20%,16V,GP,-,5x7mm,2.5	
C631	2203-000257	BY130440	C-CER,CHIP;10nF,10%,50V,X7R,TP,1608	
C632	2203-001071	BY130465	C-CER,CHIP;0.056NF,5%,50V,C0G,TP,1608	
C633	2203-000140	BY130459	C-CER,CHIP;1.5nF,10%,50V,X7R,TP,1608,-	
C634	2203-001071	BY130465	C-CER,CHIP;0.056NF,5%,50V,C0G,TP,1608	
C635	2202-000797	70795075	C-CERAMIC,MLC-AXIAL;10NF,30%,16V,Y5S,TP,	
C636	2202-000797	70795075	C-CERAMIC,MLC-AXIAL;10NF,30%,16V,Y5S,TP,	
C640	2401-002165	BY130280	C-AL;100uF,20%,16V,GP,TP,6.3x7,5	
C643	2203-000257	BY130440	C-CER,CHIP;10nF,10%,50V,X7R,TP,1608	
C644	2203-000257	BY130440	C-CER,CHIP;10nF,10%,50V,X7R,TP,1608	
C647	2202-000216	70795080	C-CERAMIC,MLC-AXIAL;0.027NF,5%,50V,SL,TP	
C651	2202-000216	70795080	C-CERAMIC,MLC-AXIAL;0.027NF,5%,50V,SL,TP	
C652	2202-000216	70795080	C-CERAMIC,MLC-AXIAL;0.027NF,5%,50V,SL,TP	
C653	2203-000257	BY130440	C-CER,CHIP;10nF,10%,50V,X7R,TP,1608	
C657	2203-000257	BY130440	C-CER,CHIP;10nF,10%,50V,X7R,TP,1608	
C658	2202-000295	70795082	C-CERAMIC,MLC-AXIAL;68pF,5%,50V,SL,TP,3.	
CN604	AC37-00027A	BY634826	CONNECTOR-HEADER;20045WS,X-11,T8.5,W17.4	
D601	0401-000005	BY430017	DIODE-SWITCHING;1N4148,75V,150MA,DO-35,T	
D605	0401-000005	BY430017	DIODE-SWITCHING;1N4148,75V,150MA,DO-35,T	
GP601	AC63-00043A	BY730731	SHIELD CASE-GROUND PCB;SV-643F,STPE,T0.3	
IC601	AC09-00475A	BY631277	IC MICOM;MN101DF10G,-,100PIN,5V,14.313M	
IC603	1103-001330	BY631226	IC-EEPROM;S524A40X41,512x8Bit,DIP,8P,9.2	
IC6B1	AC14-12009W	70796313	IC-RESET;PST572K,TO-92,R59-1766 2.5V	
L601	2702-000108	70795168	INDUCTOR-RADIAL;100uH,5%,6.0x6.4mm	
L602	2701-000002	BY330009	INDUCTOR-AXIAL;100UH,10%,4298	
L603	2701-000002	BY330009	INDUCTOR-AXIAL;100UH,10%,4298	
L604	2701-000002	BY330009	INDUCTOR-AXIAL;100UH,10%,4298	
LD601	0601-001817	BY430114	LED-IR;SIDE-VIEW,2.5mm,75mW,6V,940,TR	
PT601	0604-001275	BY631213	PHOTO-INTERRUPTER;-,-,-,SNAP,TR	
PT602	0604-001275	BY631213	PHOTO-INTERRUPTER;-,-,-,SNAP,TR	
Q601	0504-000129	70795815	TR-DIGITAL;KSR1104,NPN,200mW,47K/47K,SOT	
R601	2007-000094	BY230288	R-CHIP;22Kohm,5%,1/10W,TP,1608	
R602	2001-000515	70795019	R-CARBON;220OHM,5%,1/8W,AA,TP,1.8X3.2MM	
R603	2007-000094	BY230288	R-CHIP;22Kohm,5%,1/10W,TP,1608	
R604	2001-000515	70795019	R-CARBON;220OHM,5%,1/8W,AA,TP,1.8X3.2MM	
R605	2001-000111	BY230144	R-CARBON;150OHM,5%,1/4W,AA,TP,2.4X6.4MM	
R606	2007-000094	BY230288	R-CHIP;22Kohm,5%,1/10W,TP,1608	
R607	2001-000633	70795029	R-CARBON;30KOHM,5%,1/8W,AA,TP,1.8X3.2MM	
R609	2007-000078	BY230279	R-CHIP;1Kohm,5%,1/10W,TP,1608	
R611	2007-000081	BY230281	R-CHIP;2.7Kohm,5%,1/10W,TP,1608	
R613	2007-000090	BY230285	R-CHIP;10Kohm,5%,1/10W,TP,1608	
R614	2001-000429	70795005	R-CARBON;1KOHM,5%,1/8W,AA,TP,1.8X3.2MM	
R615	2007-000086	BY230283	R-CHIP;5.6Kohm,5%,1/10W,TP,1608	
R616	2001-000429	70795005	R-CARBON;1KOHM,5%,1/8W,AA,TP,1.8X3.2MM	
R617	2007-000122	BY230294	R-CHIP;1.2Kohm,5%,1/10W,TP,1608	
R618	2007-000098	BY230291	R-CHIP;56Kohm,5%,1/10W,TP,1608	
R619	2001-000290	70795006	R-CARBON;10KOHM,5%,1/8W,AA,TP,1.8X3.2MM	
R621	2001-000780	70795039	R-CARBON;470OHM,5%,1/8W,AA,TP,1.8X3.2MM	
R622	2001-000780	70795039	R-CARBON;470OHM,5%,1/8W,AA,TP,1.8X3.2MM	
R623	2007-000084	BY230282	R-CHIP;4.7Kohm,5%,1/10W,TP,1608	
R624	2007-000084	BY230282	R-CHIP;4.7Kohm,5%,1/10W,TP,1608	
R625	2001-000290	70795006	R-CARBON;10KOHM,5%,1/8W,AA,TP,1.8X3.2MM	
R630	2007-000098	BY230291	R-CHIP;56Kohm,5%,1/10W,TP,1608	
R631	2007-000098	BY230291	R-CHIP;56Kohm,5%,1/10W,TP,1608	
R632	2007-000097	BY230290	R-CHIP;47Kohm,5%,1/10W,TP,1608	
R634	2007-000070	BY230274	R-CHIP;0ohm,5%,1/10W,TP,1608	
R638	2007-000082	BY230233	R-CHIP;3.3Kohm,5%,1/10W,TP,1608	
R639	2007-000081	BY230281	R-CHIP;2.7Kohm,5%,1/10W,TP,1608	
R641	2001-000290	70795006	R-CARBON;10KOHM,5%,1/8W,AA,TP,1.8X3.2MM	
R643	2007-000090	BY230285	R-CHIP;10Kohm,5%,1/10W,TP,1608	
R644	2007-000090	BY230285	R-CHIP;10Kohm,5%,1/10W,TP,1608	
R645	2007-000090	BY230285	R-CHIP;10Kohm,5%,1/10W,TP,1608	
R646	2007-000086	BY230283	R-CHIP;5.6Kohm,5%,1/10W,TP,1608	
R647	2007-000076	BY230310	R-CHIP;330ohm,5%,1/10W,TP,1608	
R648	2007-000076	BY230310	R-CHIP;330ohm,5%,1/10W,TP,1608	
R649	2007-000084	BY230282	R-CHIP;4.7Kohm,5%,1/10W,TP,1608	
R650	2007-000084	BY230282	R-CHIP;4.7Kohm,5%,1/10W,TP,1608	
R651	2007-000084	BY230282	R-CHIP;4.7Kohm,5%,1/10W,TP,1608	
R652	2001-000290	70795006	R-CARBON;10KOHM,5%,1/8W,AA,TP,1.8X3.2MM	
R653	2007-000078	BY230279	R-CHIP;1Kohm,5%,1/10W,TP,1608	
R656	2007-000090	BY230285	R-CHIP;10Kohm,5%,1/10W,TP,1608	
R659	2001-000429	70795005	R-CARBON;1KOHM,5%,1/8W,AA,TP,1.8X3.2MM	
R660	2001-000010	70795052	R-CARBON;68KOHM,5%,1/8W,AA,TP,1.8X3.2MM	
R661	2007-000078	BY230279	R-CHIP;1Kohm,5%,1/10W,TP,1608	
R662	2001-000290	70795006	R-CARBON;10KOHM,5%,1/8W,AA,TP,1.8X3.2MM	
R663	2001-000429	70795005	R-CARBON;1KOHM,5%,1/8W,AA,TP,1.8X3.2MM	
R664	2001-000429	70795005	R-CARBON;1KOHM,5%,1/8W,AA,TP,1.8X3.2MM	
R666	2007-000074	BY230276	R-CHIP;100ohm,5%,1/10W,TP,1608	
R667	2007-000074	BY230276	R-CHIP;100ohm,5%,1/10W,TP,1608	
R668	2007-000078	BY230279	R-CHIP;1Kohm,5%,1/10W,TP,1608	
R669	2007-000074	BY230276	R-CHIP;100ohm,5%,1/10W,TP,1608	
R670	2007-000074	BY230276	R-CHIP;100ohm,5%,1/10W,TP,1608	
R671	2007-000074	BY230276	R-CHIP;100ohm,5%,1/10W,TP,1608	
R673	2001-000429	70795005	R-CARBON;1KOHM,5%,1/8W,AA,TP,1.8X3.2MM	
R676	2001-000429	70795005	R-CARBON;1KOHM,5%,1/8W,AA,TP,1.8X3.2MM	
R677	2001-000429	70795005	R-CARBON;1KOHM,5%,1/8W,AA,TP,1.8X3.2MM	
R678	2007-000078	BY230279	R-CHIP;1Kohm,5%,1/10W,TP,1608	
R679	2007-000078	BY230279	R-CHIP;1Kohm,5%,1/10W,TP,1608	
R680	2007-000078	BY230279	R-CHIP;1Kohm,5%,1/10W,TP,1608	
R681	2001-000273	70795007	R-CARBON;100KOHM,5%,1/8W,AA,TP,1.8X3.2M	
R690	2001-000429	70795005	R-CARBON;1KOHM,5%,1/8W,AA,TP,1.8X3.2MM	
R691	2001-000429	70795005	R-CARBON;1KOHM,5%,1/8W,AA,TP,1.8X3.2MM	
R692	2001-000429	70795005	R-CARBON;1KOHM,5%,1/8W,AA,TP,1.8X3.2MM	
R694	2007-000078	BY230279	R-CHIP;1Kohm,5%,1/10W,TP,1608	
R6A01	2001-000273	70795007	R-CARBON;100KOHM,5%,1/8W,AA,TP,1.8X3.2M	
S602	0603-001134	BY631212	PHOTO TR;-,30V,4V,50mA,75mW,TRAY	
SW602	AC34-00006A	BY634846	SWITCH-REC;-,-,-,-,-,-,-,-,-,-,-,-,-,-,-,-	
SW603	AC34-00005A	BY634845	SWITCH MODE;-,-,-,-,-,-,-,-,-,-,-,-,-,-,-,	
XT601	2801-001384	70796216	CRYSTAL-UNIT;14.31818MHz,30ppm,28-AAA,16	
AUDIO/VIDEO PARTS				
C301	2203-005065	BY130479	C-CER,CHIP;1000nF,+80-20%,10V,Y5V,-,1608	
C302	2203-006243	BY130468	C-CER,CHIP;0.36NF,10%,50V,X7R,TP,1608	
C303	2203-005065	BY130479	C-CER,CHIP;1000nF,+80-20%,10V,Y5V,-,1608	
C304	2203-000405	BY130463	C-CER,CHIP;0.18NF,5%,50V,C0G,TP,1608	

Loc.No	Reference No	TSB Part No	Description ; Specification	Remark
C305	2203-005065	BY130479	C-CER,CHIP;1000nF,+80-20%,10V,Y5V,-,1608	
C306	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
C307	2401-001492	BY130497	C-AL;47uF,20%,16V,GP,-,5x7mm,2.5	
C308	2401-000909	BY130494	C-AL;22uF,20%,16V,GP,TP,5x5,2.5	
C309	2401-002112	BY130498	C-AL;10uF,20%,16V,GP,TP,4x7,2.5	
C310	2203-005065	BY130479	C-CER,CHIP;1000nF,+80-20%,10V,Y5V,-,1608	
C312	2203-000257	BY130440	C-CER,CHIP;10nF,10%,50V,X7R,TP,1608	
C314	2203-005065	BY130479	C-CER,CHIP;1000nF,+80-20%,10V,Y5V,-,1608	
C315	2203-005065	BY130479	C-CER,CHIP;1000nF,+80-20%,10V,Y5V,-,1608	
C316	2203-005065	BY130479	C-CER,CHIP;1000nF,+80-20%,10V,Y5V,-,1608	
C317	2203-005065	BY130479	C-CER,CHIP;1000nF,+80-20%,10V,Y5V,-,1608	
C318	2202-000797	70795075	C-CERAMIC,MLC-AXIAL;10NF,30%,16V,Y5S,TP,	
C319	2202-000797	70795075	C-CERAMIC,MLC-AXIAL;10NF,30%,16V,Y5S,TP,	
C320	2203-000257	BY130440	C-CER,CHIP;10nF,10%,50V,X7R,TP,1608	
C321	2401-003221	BY130499	C-AL;100uF,20%,16V,GP,TP,8X5,2.5	
C322	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
C323	2203-005065	BY130479	C-CER,CHIP;1000nF,+80-20%,10V,Y5V,-,1608	
C324	2203-000257	BY130440	C-CER,CHIP;10nF,10%,50V,X7R,TP,1608	
C325	2203-005065	BY130479	C-CER,CHIP;1000nF,+80-20%,10V,Y5V,-,1608	
C326	2203-002398	BY130454	C-CER,CHIP;22nF,10%,50V,X7R,TP,1608	
C327	2203-005065	BY130479	C-CER,CHIP;1000nF,+80-20%,10V,Y5V,-,1608	
C328	2401-003221	BY130499	C-AL;100uF,20%,16V,GP,TP,8X5,2.5	
C329	2203-000257	BY130440	C-CER,CHIP;10nF,10%,50V,X7R,TP,1608	
C330	2203-000975	BY130484	C-CER,CHIP;47nF,10%,25V,X7R,TP,1608,-	
C331	2203-000975	BY130484	C-CER,CHIP;47nF,10%,25V,X7R,TP,1608,-	
C332	2203-000975	BY130484	C-CER,CHIP;47nF,10%,25V,X7R,TP,1608,-	
C333	2203-000975	BY130484	C-CER,CHIP;47nF,10%,25V,X7R,TP,1608,-	
C334	2401-001492	BY130497	C-AL;47uF,20%,16V,GP,-,5x7mm,2.5	
C335	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
C336	2203-005065	BY130479	C-CER,CHIP;1000nF,+80-20%,10V,Y5V,-,1608	
C337	2401-001492	BY130497	C-AL;47uF,20%,16V,GP,-,5x7mm,2.5	
C338	2203-000257	BY130440	C-CER,CHIP;10nF,10%,50V,X7R,TP,1608	
C340	2401-000918	70699092	C-AL;22uF,20%,16V,GP,-,6.3x7,5	
C342	2401-001169	BY130277	C-AL;33UF,20%,16V,GP,-,6.3X7,5	
C343	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
C344	2203-001211	BY130448	C-CER,CHIP;8.2nF,10%,50V,X7R,TP,1608	
C345	2203-000257	BY130440	C-CER,CHIP;10nF,10%,50V,X7R,TP,1608	
C346	2401-000414	BY130273	C-AL;10uF,20%,16V,GP,TP,4x7,5	
C347	2203-000491	BY130443	C-CER,CHIP;2.2nF,10%,50V,X7R,TP,1608,-	
C348	2203-001052	BY130464	C-CER,CHIP;0.56nF,10%,50V,X7R,TP,1608	
C349	2401-001250	70796211	C-AL;4.7uF,20%,35V,GP,TP,4x5,5	
C350	2203-001103	BY130447	C-CER,CHIP;6.8nF,10%,50V,X7R,TP,1608,-	
C351	2203-001211	BY130448	C-CER,CHIP;8.2nF,10%,50V,X7R,TP,1608	
C352	2203-000257	BY130440	C-CER,CHIP;10nF,10%,50V,X7R,TP,1608	
C353	2401-001250	70796211	C-AL;4.7uF,20%,35V,GP,TP,4x5,5	
C354	2203-002041	BY130477	C-CER,CHIP;0.47nF,10%,50V,X7R,TP,1608	
C355	2301-000110	BY130209	C-FILM,LEAD-PEF;1.8nF,5%,100V,TP,7x3.0x6	
C356	2401-001492	BY130497	C-AL;47uF,20%,16V,GP,-,5x7mm,2.5	
C357	2301-000174	BY130375	C-FILM,LEAD-PEF;15nF,5%,100V,TP,7.2x4.0x	
C358	2203-000257	BY130440	C-CER,CHIP;10nF,10%,50V,X7R,TP,1608	
C359	2203-000257	BY130440	C-CER,CHIP;10nF,10%,50V,X7R,TP,1608	
C360	2203-000257	BY130440	C-CER,CHIP;10nF,10%,50V,X7R,TP,1608	
C371	2203-001071	BY130465	C-CER,CHIP;0.056NF,5%,50V,C0G,TP,1608	
C372	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
CN01	3708-000270	70795501	CONNECTOR-FPC/FFC/PIC;33P,1.25MM,STRAIGH	
CN02	3708-000270	70795501	CONNECTOR-FPC/FFC/PIC;33P,1.25MM,STRAIGH	
CN03	3711-004379	BY634830	CONNECTOR-HEADER;BOX,4P,1R,2MM,STRAIGHT,	
CN04	3711-000827	BY634827	CONNECTOR-HEADER;BOX,2P,1R,2mm,STRAIGHT,	
CN301	3708-000391	70796387	CONNECTOR-FPC/FFC/PIC;10P,1.25MM,STRAIGH	
CN302	AC37-00028A	BY634831	CONNECTOR-SOCKET;-,X-11,T9.0,W8.5,PBT NT	
CN303	3708-001165	BY634023	CONNECTOR-FPC/FFC/PIC;6P,1.25MM,STRAIGHT	
CN303B	3809-001206	BY634415	CABLE-FLAT;30V,-20to+80C,140mm,6P,1.25mm	
IC301	1204-001952	BY631201	IC-VIDEO PROCESS;LA71207,QFP,80P,14X14MM	
L301	AC27-92001M	70795644	COIL-INDUCTOR;RH3.5X6.5RS,BEAD(RADIAL),-	
L302	3301-000297	BY330019	BEAD-AXIAL;25ohm,3.6x1.2x5.7mm,,TP,,,	
L303	3301-000297	BY330019	BEAD-AXIAL;25ohm,3.6x1.2x5.7mm,,TP,,,	
L304	3301-000297	BY330019	BEAD-AXIAL;25ohm,3.6x1.2x5.7mm,,TP,,,	
L305	AC27-92001M	70795644	COIL-INDUCTOR;RH3.5X6.5RS,BEAD(RADIAL),-	
L306	2702-000120	70795171	INDUCTOR-RADIAL;15000uH,5%,6.2x7.4mm	
L307	2701-000002	BY330009	INDUCTOR-AXIAL;100UH,10%,4298	
L308	2702-000166	70795862	INDUCTOR-RADIAL;47uH,5%,6.0x6.4mm	
L309	3301-000297	BY330019	BEAD-AXIAL;25ohm,3.6x1.2x5.7mm,,TP,,,	
Q302	0501-000002	BY430105	TR-SMALL SIGNAL;KSA812,PNP,150MW,SOT-23,	
Q303	0501-000341	BY530073	TR-SMALL SIGNAL;KSC1623-L,NPN,200mW,SOT-	
Q304	0501-000002	BY430105	TR-SMALL SIGNAL;KSA812,PNP,150MW,SOT-23,	
Q305	0501-000442	70795142	TR-SMALL SIGNAL;KTC3203-Y,NPN,400mW,T0-9	
Q306	0501-000002	BY430105	TR-SMALL SIGNAL;KSA812,PNP,150MW,SOT-23,	
Q307	0501-000442	70795142	TR-SMALL SIGNAL;KTC3203-Y,NPN,400mW,T0-9	
Q308	0501-000442	70795142	TR-SMALL SIGNAL;KTC3203-Y,NPN,400mW,T0-9	
R301	2007-000092	BY230287	R-CHIP;15Kohm,5%,1/10W,TP,1608	
R302	2007-001056	BY230273	R-CHIP;6.2Kohm,5%,1/10W,TP,1608	
R303	2007-000079	BY230280	R-CHIP;1.8Kohm,5%,1/10W,TP,1608	
R304	2007-000079	BY230280	R-CHIP;1.8Kohm,5%,1/10W,TP,1608	
R305	2001-000734	70795040	R-CARBON;4.7KOHM,5%,1/8W,AA,TP,1.8X3.2M	
R306	2001-000362	70796067	R-CARBON;150OHM,5%,1/8W,AA,TP,1.8X3.2MM	
R308	2007-000106	BY230311	R-CHIP;220Kohm,5%,1/10W,TP,1608	
R309	2007-000105	BY230347	R-CHIP;200Kohm,5%,1/10W,TP,1608	
R310	2007-000124	BY230295	R-CHIP;2.2Kohm,5%,1/10W,TP,1608	
R311	2007-001114	BY230317	R-CHIP;680Kohm,5%,1/10W,TP,1608	
R312	2007-000122	BY230294	R-CHIP;1.2Kohm,5%,1/10W,TP,1608	
R313	2001-000258	70795357	R-CARBON;1.8KOHM,5%,1/8W,AA,TP,1.8X3.2M	
R314	2007-000123	BY230306	R-CHIP;1.5Kohm,5%,1/10W,TP,1608	
R315	2007-001179	BY230305	R-CHIP;8.2Kohm,5%,1/10W,TP,1608	
R316	2001-000290	70795006	R-CARBON;10KOHM,5%,1/8W,AA,TP,1.8X3.2MM	
R317	2001-000387	70795606	R-CARBON;16KOHM,5%,1/8W,AA,TP,1.8X3.2MM	
R318	2001-000387	70795606	R-CARBON;16KOHM,5%,1/8W,AA,TP,1.8X3.2MM	
R319	2001-000290	70795006	R-CARBON;10KOHM,5%,1/8W,AA,TP,1.8X3.2MM	
R320	2007-000079	BY230280	R-CHIP;1.8Kohm,5%,1/10W,TP,1608	
R322	2007-000082	BY230233	R-CHIP;3.3Kohm,5%,1/10W,TP,1608	
R326	2007-000122	BY230294	R-CHIP;1.2Kohm,5%,1/10W,TP,1608	
R327	2007-000070	BY230274	R-CHIP;0ohm,5%,1/10W,TP,1608	
R328	2007-000127	BY230313	R-CHIP;9.1Kohm,5%,1/10W,TP,1608	
R329	2007-000133	BY230297	R-CHIP;330Kohm,5%,1/10W,TP,1608	
R330	2007-000402	BY230314	R-CHIP;150ohm,5%,1/10W,TP,1608	
R331	2007-000129	BY230307	R-CHIP;27Kohm,5%,1/10W,TP,1608	
R332	2007-000078	BY230279	R-CHIP;1Kohm,5%,1/10W,TP,1608	
R333	2001-000221	BY230019	R-CARBON;1.2KOHM,5%,1/8W,AA,TP,1.8X3.2M	
R334	2007-000094	BY230288	R-CHIP;22Kohm,5%,1/10W,TP,1608	
R335	2007-000097	BY230290	R-CHIP;47Kohm,5%,1/10W,TP,1608	
R336	2007-000090	BY230285	R-CHIP;10Kohm,5%,1/10W,TP,1608	
R338	2007-000074	BY230276	R-CHIP;100ohm,5%,1/10W,TP,1608	
R339	2007-000124	BY230295	R-CHIP;2.2Kohm,5%,1/10W,TP,1608	
R340	2007-000124	BY230295	R-CHIP;2.2Kohm,5%,1/10W,TP,1608	
R341	2001-000522	70795021	R-CARBON;22KOHM,5%,1/8W,AA,TP,1.8X3.2MM	
R342	2007-000090	BY230285	R-CHIP;10Kohm,5%,1/10W,TP,1608	
R343	2007-001002	BY230316	R-CHIP;510ohm,5%,1/10W,TP,1608	
R344	2007-001002	BY230316	R-CHIP;510ohm,5%,1/10W,TP,1608	
R348	2007-000086	BY230283	R-CHIP;5.6Kohm,5%,1/10W,TP,1608	
R3D05	2007-000124	BY230295	R-CHIP;2.2Kohm,5%,1/10W,TP,1608	
R3D06	2001-000800	70795044	R-CARBON;5.1KOHM,5%,1/8W,AA,TP,1.8X3.2M	
XT301	2801-003399	BY633012	CRYSTAL-UNIT;3.579545MHz,15ppm,28-AAA,S,	
ZD401	0403-000390	70795272	DIODE-ZENER;UZP33B,31.4-34.6V,1000MW,DO-	

HI-FI PARTS

Loc.No	Reference No	TSB Part No	Description ; Specification	Remark
C502	2202-002037	BY130027	C-CERAMIC,MLC-AXIAL;100nF,80-20%,50V,Y5V	
C503	2401-002112	BY130498	C-AL;10uF,20%,16V,GP,TP,4x7,2.5	
C504	2203-005065	BY130479	C-CER,CHIP;1000nF,+80-20%,10V,Y5V,-,1608	
C505	2401-000909	BY130494	C-AL;22uF,20%,16V,GP,TP,5x5,2.5	
C506	2401-002112	BY130498	C-AL;10uF,20%,16V,GP,TP,4x7,2.5	
C507	2203-001724	BY130023	C-CER,CHIP;4700NF,+80-20%,16V,Y5V,TP,321	
C508	2203-000257	BY130440	C-CER,CHIP;10nF,10%,50V,X7R,TP,1608	
C509	2401-000909	BY130494	C-AL;22uF,20%,16V,GP,TP,5x5,2.5	

Loc.No	Reference No	TSB Part No	Description ; Specification	Remark
C510	2203-000888	BY130483	C-CER,CHIP;4.7nF,10%,50V,X7R,TP,1608	
C511	2203-000257	BY130440	C-CER,CHIP;10nF,10%,50V,X7R,TP,1608	
C512	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
C513	2203-001724	BY130023	C-CER,CHIP;4700NF,+80-20%,16V,Y5V,TP,321	
C514	2401-002112	BY130498	C-AL;10uF,20%,16V,GP,TP,4x7,2.5	
C515	2203-000257	BY130440	C-CER,CHIP;10nF,10%,50V,X7R,TP,1608	
C516	2401-000909	BY130494	C-AL;22uF,20%,16V,GP,TP,5x5,2.5	
C517	2203-000888	BY130483	C-CER,CHIP;4.7nF,10%,50V,X7R,TP,1608	
C518	2203-000257	BY130440	C-CER,CHIP;10nF,10%,50V,X7R,TP,1608	
C519	2203-001724	BY130023	C-CER,CHIP;4700NF,+80-20%,16V,Y5V,TP,321	
C520	2401-002112	BY130498	C-AL;10uF,20%,16V,GP,TP,4x7,2.5	
C521	2203-005065	BY130479	C-CER,CHIP;1000nF,+80-20%,10V,Y5V,-,1608	
C522	2202-000797	70795075	C-CERAMIC,MLC-AXIAL;10NF,30%,16V,Y5S,TP,	
C523	2203-005065	BY130479	C-CER,CHIP;1000nF,+80-20%,10V,Y5V,-,1608	
C524	2203-005065	BY130479	C-CER,CHIP;1000nF,+80-20%,10V,Y5V,-,1608	
C525	2203-001634	BY130460	C-CER,CHIP;33nF,10%,50V,X7R,TP,1608,1.6m	
C526	2401-001249	BY130496	C-AL;4.7uF,20%,35V,GP,TP,4x5,2.5	
C527	2203-005065	BY130479	C-CER,CHIP;1000nF,+80-20%,10V,Y5V,-,1608	
C529	2203-005065	BY130479	C-CER,CHIP;1000nF,+80-20%,10V,Y5V,-,1608	
C530	2203-005065	BY130479	C-CER,CHIP;1000nF,+80-20%,10V,Y5V,-,1608	
C531	2401-001492	BY130497	C-AL;47uF,20%,16V,GP,-,5x7mm,2.5	
C532	2203-000257	BY130440	C-CER,CHIP;10nF,10%,50V,X7R,TP,1608	
C533	2203-005065	BY130479	C-CER,CHIP;1000nF,+80-20%,10V,Y5V,-,1608	
C534	2203-005065	BY130479	C-CER,CHIP;1000nF,+80-20%,10V,Y5V,-,1608	
C535	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
C536	2203-001724	BY130023	C-CER,CHIP;4700NF,+80-20%,16V,Y5V,TP,321	
C537	2401-000918	70699092	C-AL;22uF,20%,16V,GP,-,6.3x7,5	
C538	2203-001724	BY130023	C-CER,CHIP;4700NF,+80-20%,16V,Y5V,TP,321	
C539	2401-000918	70699092	C-AL;22uF,20%,16V,GP,-,6.3x7,5	
C540	2203-001724	BY130023	C-CER,CHIP;4700NF,+80-20%,16V,Y5V,TP,321	
C541	2401-001250	70796211	C-AL;4.7uF,20%,35V,GP,TP,4x5,5	
C542	2401-000598	BY130042	C-AL;1uF,20%,50V,GP,TP,4x7,5	
C543	2203-001724	BY130023	C-CER,CHIP;4700NF,+80-20%,16V,Y5V,TP,321	
C544	2203-001724	BY130023	C-CER,CHIP;4700NF,+80-20%,16V,Y5V,TP,321	
C545	2203-000257	BY130440	C-CER,CHIP;10nF,10%,50V,X7R,TP,1608	
C548	2203-005065	BY130479	C-CER,CHIP;1000nF,+80-20%,10V,Y5V,-,1608	
C549	2203-005065	BY130479	C-CER,CHIP;1000nF,+80-20%,10V,Y5V,-,1608	
C550	2203-005065	BY130479	C-CER,CHIP;1000nF,+80-20%,10V,Y5V,-,1608	
IC501	1204-002222	BY631246	IC-SIGNAL PROCESSOR;LA72670M-MPB,QFP,80P	
L501	3301-000297	BY330019	BEAD-AXIAL;25ohm,3.6x1.2x5.7mm,,TP,,,	
L502	3301-000297	BY330019	BEAD-AXIAL;25ohm,3.6x1.2x5.7mm,,TP,,,	
R506	2007-000077	BY230278	R-CHIP;470ohm,5%,1/10W,TP,1608	
R507	2007-000081	BY230281	R-CHIP;2.7Kohm,5%,1/10W,TP,1608	
R508	2007-000130	BY230352	R-CHIP;39Kohm,5%,1/10W,TP,1608	
R509	2001-000780	70795039	R-CARBON;470OHM,5%,1/8W,AA,TP,1.8X3.2MM	
R510	2001-000780	70795039	R-CARBON;470OHM,5%,1/8W,AA,TP,1.8X3.2MM	
R516	2007-000078	BY230279	R-CHIP;1Kohm,5%,1/10W,TP,1608	
R517	2007-000078	BY230279	R-CHIP;1Kohm,5%,1/10W,TP,1608	
R518	2007-000084	BY230282	R-CHIP;4.7Kohm,5%,1/10W,TP,1608	
R523	2007-000088	BY230345	R-CHIP;7.5Kohm,5%,1/10W,TP,1608	
R524	2001-000786	70795041	R-CARBON;47KOHM,5%,1/8W,AA,TP,1.8X3.2MM	
R525	2001-000786	70795041	R-CARBON;47KOHM,5%,1/8W,AA,TP,1.8X3.2MM	
R526	2007-000088	BY230345	R-CHIP;7.5Kohm,5%,1/10W,TP,1608	
R527	2007-000091	BY230286	R-CHIP;12Kohm,5%,1/10W,TP,1608	
R528	2007-000805	BY230315	R-CHIP;36Kohm,5%,1/10W,TP,1608	

DISPLAY/FUNCTION MARTIX PARTS

Loc.No	Reference No	TSB Part No	Description ; Specification	Remark
C701	2203-000440	BY130462	C-CER,CHIP;1nF,10%,50V,X7R,TP,1608,-	
C702	2203-000257	BY130440	C-CER,CHIP;10nF,10%,50V,X7R,TP,1608	
C703	2401-002165	BY130280	C-AL;100uF,20%,16V,GP,TP,6.3x7,5	
C704	2401-003480	BY130339	C-AL;1000UF,20%,10V,LZ,TP,10X16MM,5	
C705	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
CN701	3711-004625	BY634422	CONNECTOR-HEADER;3WALL,8P,1R,2MM,STRAIGH	
D701	0401-000005	BY430017	DIODE-SWITCHING;1N4148,75V,150MA,DO-35,T	
D702	0401-000005	BY430017	DIODE-SWITCHING;1N4148,75V,150MA,DO-35,T	
D703	0401-000005	BY430017	DIODE-SWITCHING;1N4148,75V,150MA,DO-35,T	
D704	0401-000005	BY430017	DIODE-SWITCHING;1N4148,75V,150MA,DO-35,T	
DT701	AK07-00017A	BY634844	LED DISPLAY;LTG-0377M,DVD-VR300,70,10,7,	
IC701	1003-001443	BY631188	IC-LED DRIVER;PT6959,SOIC,28P,300MIL,-,-	
L701	2701-000002	BY330009	INDUCTOR-AXIAL;100UH,10%,4298	
Q701	0501-000341	BY530073	TR-SMALL SIGNAL;KSC1623-L,NPN,200mW,SOT-	
Q702	0501-000341	BY530073	TR-SMALL SIGNAL;KSC1623-L,NPN,200mW,SOT-	
R701	2001-000429	70795005	R-CARBON;1KOHM,5%,1/8W,AA,TP,1.8X3.2MM	
R702	2001-000008	70795014	R-CARBON;15KOHM,5%,1/8W,AA,TP,1.8X3.2MM	
R703	2001-000429	70795005	R-CARBON;1KOHM,5%,1/8W,AA,TP,1.8X3.2MM	
R704	2001-000008	70795014	R-CARBON;15KOHM,5%,1/8W,AA,TP,1.8X3.2MM	
R705	2001-000429	70795005	R-CARBON;1KOHM,5%,1/8W,AA,TP,1.8X3.2MM	
R706	2007-000092	BY230287	R-CHIP;15Kohm,5%,1/10W,TP,1608	
R707	2001-000429	70795005	R-CARBON;1KOHM,5%,1/8W,AA,TP,1.8X3.2MM	
R708	2007-000092	BY230287	R-CHIP;15Kohm,5%,1/10W,TP,1608	
R711	2007-000090	BY230285	R-CHIP;10Kohm,5%,1/10W,TP,1608	
R712	2007-001010	BY230360	R-CHIP;51Kohm,5%,1/10W,TP,1608	
R713	2001-000780	70795039	R-CARBON;470OHM,5%,1/8W,AA,TP,1.8X3.2MM	
R714	2001-000780	70795039	R-CARBON;470OHM,5%,1/8W,AA,TP,1.8X3.2MM	
R715	2001-000429	70795005	R-CARBON;1KOHM,5%,1/8W,AA,TP,1.8X3.2MM	
R716	2001-000429	70795005	R-CARBON;1KOHM,5%,1/8W,AA,TP,1.8X3.2MM	
R719	2001-000429	70795005	R-CARBON;1KOHM,5%,1/8W,AA,TP,1.8X3.2MM	
RM701	0609-001198	BY630336	MODULE REMOCON;VERTICAL,19MM,TR	
SW701	3404-001182	BY632011	SWITCH-TACT;DC12V,50MA,100GF,6.0X6.0X5.0	
SW702	3404-001182	BY632011	SWITCH-TACT;DC12V,50MA,100GF,6.0X6.0X5.0	
SW703	3404-001182	BY632011	SWITCH-TACT;DC12V,50MA,100GF,6.0X6.0X5.0	
SW704	3404-001182	BY632011	SWITCH-TACT;DC12V,50MA,100GF,6.0X6.0X5.0	
SW705	3404-001182	BY632011	SWITCH-TACT;DC12V,50MA,100GF,6.0X6.0X5.0	
SW706	3404-001182	BY632011	SWITCH-TACT;DC12V,50MA,100GF,6.0X6.0X5.0	
SW710	3404-001182	BY632011	SWITCH-TACT;DC12V,50MA,100GF,6.0X6.0X5.0	
P002	**AK92-00429B**	**BY630421**	**ASSY PCB-MAIN DVD;D-VR3TU/TSB,TOSHIBA,DV**	
AC101	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
AC104	2402-001042	BY130507	C-AL,SMD;100uF,20%,16V,GP,TP,6.6x6.6x5.	
AC105	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
AC28	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
AC29	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
AC30	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
AC4	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
AC5	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
AC6	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
AC7	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
AC8	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
AC816	2203-000236	BY130439	C-CER,CHIP;0.1NF,5%,50V,C0G,TP,1608	
AC818	2203-000236	BY130439	C-CER,CHIP;0.1NF,5%,50V,C0G,TP,1608	
AC820	2203-000783	BY130435	C-CER,CHIP;0.33NF,5%,50V,C0G,TP,1608	
AC821	2203-001554	BY130450	C-CER,CHIP;1.8nF,10%,50V,X7R,TP,1608	
AC822	2402-001042	BY130507	C-AL,SMD;100uF,20%,16V,GP,TP,6.6x6.6x5.	
AC823	2203-000783	BY130435	C-CER,CHIP;0.33NF,5%,50V,C0G,TP,1608	
AC824	2203-001554	BY130450	C-CER,CHIP;1.8nF,10%,50V,X7R,TP,1608	
AC831	2402-001042	BY130507	C-AL,SMD;100uF,20%,16V,GP,TP,6.6x6.6x5.	
AC891	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
AC892	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
AC908	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
AC911	2402-001042	BY130507	C-AL,SMD;100uF,20%,16V,GP,TP,6.6x6.6x5.	
AC912	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
AC913	2402-001042	BY130507	C-AL,SMD;100uF,20%,16V,GP,TP,6.6x6.6x5.	
AC914	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
AC915	2402-000176	BY130504	C-AL,SMD;10uF,20%,16V,GP,TP,4.3x4.3x5.4	
AC917	2402-000176	BY130504	C-AL,SMD;10uF,20%,16V,GP,TP,4.3x4.3x5.4	
AE1	2402-001042	BY130507	C-AL,SMD;100uF,20%,16V,GP,TP,6.6x6.6x5.	
AE2	2402-000202	BY130506	C-AL,SMD;100uF,20%,10V,WT,TP,6.6x6.6x5.	
AE3	2402-000179	BY130505	C-AL,SMD;47uF,20%,16V,GP,TP,6.6x6.6x5.4	
AIC1	1002-001294	BY631221	IC-D/A CONVERTER;PCM1742KE,24BIT,TSSOP,1	
AIC3	1203-002178	BY631234	IC-POSI.FIXED REG.;1563,SOP,7P,173MIL,PL	
AIC81	1201-000163	BY631232	IC-OP AMP;4560,SOP,8P,173MIL,DUAL,100V/m	
AIC82	1201-000163	BY631232	IC-OP AMP;4560,SOP,8P,173MIL,DUAL,100V/m	

Loc.No	Reference No	TSB Part No	Description ; Specification	Remark
AIC9	1002-001387	BY631222	IC-A/D CONVERTER;PCM1802,24BIT,SSOP,20P,	
AJ1	2007-000070	BY230274	R-CHIP;0ohm,5%,1/10W,TP,1608	
AL5	3301-001419	BY330073	BEAD-SMD;-,220,-,500,TP,-,0.3	
AL6	3301-001419	BY330073	BEAD-SMD;-,220,-,500,TP,-,0.3	
AL7	3301-001419	BY330073	BEAD-SMD;-,220,-,500,TP,-,0.3	
AR1	2007-000078	BY230279	R-CHIP;1Kohm,5%,1/10W,TP,1608	
AR10	2007-000113	BY230328	R-CHIP;33ohm,5%,1/10W,TP,1608	
AR11	2007-000113	BY230328	R-CHIP;33ohm,5%,1/10W,TP,1608	
AR12	2007-000113	BY230328	R-CHIP;33ohm,5%,1/10W,TP,1608	
AR13	2007-000113	BY230328	R-CHIP;33ohm,5%,1/10W,TP,1608	
AR14	2007-000113	BY230328	R-CHIP;33ohm,5%,1/10W,TP,1608	
AR15	2007-000120	BY230350	R-CHIP;680ohm,5%,1/10W,TP,1608	
AR16	2007-000070	BY230274	R-CHIP;0ohm,5%,1/10W,TP,1608	
AR2	2007-000090	BY230285	R-CHIP;10Kohm,5%,1/10W,TP,1608	
AR3	2007-000115	BY230348	R-CHIP;82ohm,5%,1/10W,TP,1608	
AR4	2007-000113	BY230328	R-CHIP;33ohm,5%,1/10W,TP,1608	
AR5	2007-000113	BY230328	R-CHIP;33ohm,5%,1/10W,TP,1608	
AR6	2007-000084	BY230282	R-CHIP;4.7Kohm,5%,1/10W,TP,1608	
AR7	2007-000115	BY230348	R-CHIP;82ohm,5%,1/10W,TP,1608	
AR8	2007-000113	BY230328	R-CHIP;33ohm,5%,1/10W,TP,1608	
AR801	2007-000084	BY230282	R-CHIP;4.7Kohm,5%,1/10W,TP,1608	
AR802	2007-000084	BY230282	R-CHIP;4.7Kohm,5%,1/10W,TP,1608	
AR803	2007-000084	BY230282	R-CHIP;4.7Kohm,5%,1/10W,TP,1608	
AR804	2007-000082	BY230233	R-CHIP;3.3Kohm,5%,1/10W,TP,1608	
AR805	2007-000122	BY230294	R-CHIP;1.2Kohm,5%,1/10W,TP,1608	
AR806	2007-000084	BY230282	R-CHIP;4.7Kohm,5%,1/10W,TP,1608	
AR807	2007-000122	BY230294	R-CHIP;1.2Kohm,5%,1/10W,TP,1608	
AR808	2007-000082	BY230233	R-CHIP;3.3Kohm,5%,1/10W,TP,1608	
AR809	2007-000080	BY230343	R-CHIP;2Kohm,5%,1/10W,TP,1608	
AR811	2007-000080	BY230343	R-CHIP;2Kohm,5%,1/10W,TP,1608	
AR812	2007-000080	BY230343	R-CHIP;2Kohm,5%,1/10W,TP,1608	
AR813	2007-000084	BY230282	R-CHIP;4.7Kohm,5%,1/10W,TP,1608	
AR814	2007-000084	BY230282	R-CHIP;4.7Kohm,5%,1/10W,TP,1608	
AR881	2007-000102	BY230292	R-CHIP;100Kohm,5%,1/10W,TP,1608	
AR882	2007-000102	BY230292	R-CHIP;100Kohm,5%,1/10W,TP,1608	
AR894	2007-000102	BY230292	R-CHIP;100Kohm,5%,1/10W,TP,1608	
AR895	2007-000102	BY230292	R-CHIP;100Kohm,5%,1/10W,TP,1608	
AR9	2007-000115	BY230348	R-CHIP;82ohm,5%,1/10W,TP,1608	
ATAR1	2011-000475	BY230366	R-NET;33OHM,5%,1/16W,L,CHIP,8P,TP,32	
ATAR2	2011-000475	BY230366	R-NET;33OHM,5%,1/16W,L,CHIP,8P,TP,32	
ATAR3	2011-000475	BY230366	R-NET;33OHM,5%,1/16W,L,CHIP,8P,TP,32	
ATAR4	2011-000475	BY230366	R-NET;33OHM,5%,1/16W,L,CHIP,8P,TP,32	
ATCN1	3708-001935	BY634823	CONNECTOR-FPC/FFC/PIC;40P,0.5mm,SMD-S,Sn	
C110	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
C111	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
C112	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
C115	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
C117	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
C119	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
C123	2402-001237	BY130509	C-AL,SMD;330uF,##20%,6.3V,-,REEL,6.3X7.	
C124	2402-001237	BY130509	C-AL,SMD;330uF,##20%,6.3V,-,REEL,6.3X7.	
C125	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
C126	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
C127	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
C128	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
C129	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
C130	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
C140	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
C141	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
C142	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
C143	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
C144	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
C145	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
C146	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
C147	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
C150	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
C166	2203-000440	BY130462	C-CER,CHIP;1nF,10%,50V,X7R,TP,1608,-	
C167	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
C168	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
C169	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
C171	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
C173	2402-000176	BY130504	C-AL,SMD;10uF,20%,16V,GP,TP,4.3x4.3x5.4	
C174	2402-001096	BY130508	C-AL,SMD;220UF,20%,16V,GP,TP,6.6X6.6X7.	
C177	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
C178	2203-000440	BY130462	C-CER,CHIP;1nF,10%,50V,X7R,TP,1608,-	
C179	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
C183	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
C184	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
C185	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
C210	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
C214	2203-000440	BY130462	C-CER,CHIP;1nF,10%,50V,X7R,TP,1608,-	
C215	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
C217	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
C218	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
C219	2203-000440	BY130462	C-CER,CHIP;1nF,10%,50V,X7R,TP,1608,-	
C220	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
C222	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
C223	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
C224	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
C225	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
C226	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
C227	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
C228	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
C230	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
C231	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
C232	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
C78	2203-000746	BY130517	C-CER,CHIP;0.03NF,5%,50V,C0G,TP,1608	
C79	2203-000746	BY130517	C-CER,CHIP;0.03NF,5%,50V,C0G,TP,1608	
CA1	2402-001096	BY130508	C-AL,SMD;220UF,20%,16V,GP,TP,6.6X6.6X7.	
CA2	2402-001237	BY130509	C-AL,SMD;330uF,##20%,6.3V,-,REEL,6.3X7.	
CC1	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
CL1	2007-000033	70693337	R-CHIP;0ohm,5%,1/4W,TP,3216	
CL2	2007-000033	70693337	R-CHIP;0ohm,5%,1/4W,TP,3216	
CL3	2007-000033	70693337	R-CHIP;0ohm,5%,1/4W,TP,3216	
CN1	3710-002075	BY634832	CONNECTOR-SOCKET;30P,2R,2MM,SMD,SnPb,BLK	
CN2	3710-002075	BY634832	CONNECTOR-SOCKET;30P,2R,2MM,SMD,SnPb,BLK	
CN3	3711-005595	BY634833	CONNECTOR-SOCKET;BOX,12P,2R,2.0MM,SMD-S,	
CR1	2007-000074	BY230276	R-CHIP;100ohm,5%,1/10W,TP,1608	
CR2	2007-000074	BY230276	R-CHIP;100ohm,5%,1/10W,TP,1608	
CR3	2007-000083	BY230344	R-CHIP;3Kohm,5%,1/10W,TP,1608	
DC1	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
DC10	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
DC11	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
DC12	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
DC13	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
DC14	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
DC15	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
DC16	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
DC17	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
DC18	2203-000257	BY130440	C-CER,CHIP;10nF,10%,50V,X7R,TP,1608	
DC19	2203-000257	BY130440	C-CER,CHIP;10nF,10%,50V,X7R,TP,1608	
DC2	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
DC20	2203-000257	BY130440	C-CER,CHIP;10nF,10%,50V,X7R,TP,1608	
DC21	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
DC22	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
DC23	2203-000257	BY130440	C-CER,CHIP;10nF,10%,50V,X7R,TP,1608	
DC24	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
DC25	2203-000257	BY130440	C-CER,CHIP;10nF,10%,50V,X7R,TP,1608	
DC26	2203-000315	BY130441	C-CER,CHIP;0.12NF,5%,50V,C0G,TP,1608	
DC27	2203-000659	BY130515	C-CER,CHIP;0.27NF,5%,50V,C0G,TP,1608	
DC3	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
DC4	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	

Loc.No	Reference No	TSB Part No	Description ; Specification	Remark
DC5	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
DC6	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
DC66	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
DC7	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
DC8	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
DC9	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
DE1	2402-000176	BY130504	C-AL,SMD;10uF,20%,16V,GP,TP,4.3x4.3x5.4	
DE2	2402-000176	BY130504	C-AL,SMD;10uF,20%,16V,GP,TP,4.3x4.3x5.4	
DE3	2402-000007	BY130502	C-AL,SMD;22uF,20%,6.3V,GP,TP,4.3x4.3x5.	
DE4	2402-001237	BY130509	C-AL,SMD;330uF,##20%,6.3V,-,REEL,6.3X7.	
DE6	2402-001237	BY130509	C-AL,SMD;330uF,##20%,6.3V,-,REEL,6.3X7.	
DIC1	1205-002442	BY631249	IC-CODEC;DMN-8602,BGA,308P,27x27mm,PLAS	
DIC2	0801-002522	BY631215	IC-CMOS LOGIC;74VHC541,BUFFER/LINE DRIVE	
DIC3	1107-001273	BY631230	IC-FLASH MEMORY;29DL323,4Mx8/2Mx16,TSOP,	
DIC4	1106-001471	BY631229	IC-SRAM;K6X8016T3B,512Kx16Bit,TSOP2,44	
DIC5	0801-002741	BY631218	IC-CMOS LOGIC;BU4053BCFV,MUX,SSOP,16P,17	
DIC6	0802-001115	BY631219	IC-CMOS LOGIC;74ALVCH16373,D LATCH,TSSOP	
DIC7	0801-002587	BY631216	IC-CMOS LOGIC;74LVX541,8BIT BUFFER/DRIVE	
DIC8	1103-001134	BY631225	IC-EEPROM;24C040,512x8,SOP,8P,5.13x3.95m	
DL1	2007-000029	70795513	R-CHIP;0ohm,5%,1/8W,TP,2012	
DR1	2007-000071	BY230341	R-CHIP;22ohm,5%,1/10W,TP,1608	
DR10	2007-000071	BY230341	R-CHIP;22ohm,5%,1/10W,TP,1608	
DR11	2007-000071	BY230341	R-CHIP;22ohm,5%,1/10W,TP,1608	
DR2	2007-000071	BY230341	R-CHIP;22ohm,5%,1/10W,TP,1608	
DR21	2007-000071	BY230341	R-CHIP;22ohm,5%,1/10W,TP,1608	
DR28	2007-007332	BY230364	R-CHIP;1.18Kohm,1%,1/8W,TP,2012	
DR29	2007-000071	BY230341	R-CHIP;22ohm,5%,1/10W,TP,1608	
DR3	2007-000071	BY230341	R-CHIP;22ohm,5%,1/10W,TP,1608	
DR30	2007-000071	BY230341	R-CHIP;22ohm,5%,1/10W,TP,1608	
DR31	2007-000071	BY230341	R-CHIP;22ohm,5%,1/10W,TP,1608	
DR32	2007-000071	BY230341	R-CHIP;22ohm,5%,1/10W,TP,1608	
DR33	2007-000071	BY230341	R-CHIP;22ohm,5%,1/10W,TP,1608	
DR34	2007-000071	BY230341	R-CHIP;22ohm,5%,1/10W,TP,1608	
DR35	2007-000071	BY230341	R-CHIP;22ohm,5%,1/10W,TP,1608	
DR36	2007-000071	BY230341	R-CHIP;22ohm,5%,1/10W,TP,1608	
DR37	2007-000071	BY230341	R-CHIP;22ohm,5%,1/10W,TP,1608	
DR38	2007-000070	BY230274	R-CHIP;0ohm,5%,1/10W,TP,1608	
DR39	2007-000070	BY230274	R-CHIP;0ohm,5%,1/10W,TP,1608	
DR4	2007-000071	BY230341	R-CHIP;22ohm,5%,1/10W,TP,1608	
DR40	2007-000070	BY230274	R-CHIP;0ohm,5%,1/10W,TP,1608	
DR41	2007-000070	BY230274	R-CHIP;0ohm,5%,1/10W,TP,1608	
DR42	2007-000070	BY230274	R-CHIP;0ohm,5%,1/10W,TP,1608	
DR43	2007-000070	BY230274	R-CHIP;0ohm,5%,1/10W,TP,1608	
DR44	2007-000071	BY230341	R-CHIP;22ohm,5%,1/10W,TP,1608	
DR45	2007-000071	BY230341	R-CHIP;22ohm,5%,1/10W,TP,1608	
DR46	2007-000090	BY230285	R-CHIP;10Kohm,5%,1/10W,TP,1608	
DR47	2007-000071	BY230341	R-CHIP;22ohm,5%,1/10W,TP,1608	
DR48	2007-000071	BY230341	R-CHIP;22ohm,5%,1/10W,TP,1608	
DR49	2007-000071	BY230341	R-CHIP;22ohm,5%,1/10W,TP,1608	
DR5	2007-000071	BY230341	R-CHIP;22ohm,5%,1/10W,TP,1608	
DR50	2007-000071	BY230341	R-CHIP;22ohm,5%,1/10W,TP,1608	
DR51	2007-000071	BY230341	R-CHIP;22ohm,5%,1/10W,TP,1608	
DR52	2007-000071	BY230341	R-CHIP;22ohm,5%,1/10W,TP,1608	
DR53	2007-000071	BY230341	R-CHIP;22ohm,5%,1/10W,TP,1608	
DR54	2007-000071	BY230341	R-CHIP;22ohm,5%,1/10W,TP,1608	
DR55	2007-000071	BY230341	R-CHIP;22ohm,5%,1/10W,TP,1608	
DR56	2007-000090	BY230285	R-CHIP;10Kohm,5%,1/10W,TP,1608	
DR57	2007-000090	BY230285	R-CHIP;10Kohm,5%,1/10W,TP,1608	
DR58	2007-000090	BY230285	R-CHIP;10Kohm,5%,1/10W,TP,1608	
DR59	2007-000090	BY230285	R-CHIP;10Kohm,5%,1/10W,TP,1608	
DR6	2007-000071	BY230341	R-CHIP;22ohm,5%,1/10W,TP,1608	
DR60	2007-000090	BY230285	R-CHIP;10Kohm,5%,1/10W,TP,1608	
DR61	2007-000090	BY230285	R-CHIP;10Kohm,5%,1/10W,TP,1608	
DR62	2007-000070	BY230274	R-CHIP;0ohm,5%,1/10W,TP,1608	
DR63	2007-000070	BY230274	R-CHIP;0ohm,5%,1/10W,TP,1608	
DR64	2007-000090	BY230285	R-CHIP;10Kohm,5%,1/10W,TP,1608	
DR65	2007-000090	BY230285	R-CHIP;10Kohm,5%,1/10W,TP,1608	
DR66	2007-000074	BY230276	R-CHIP;100ohm,5%,1/10W,TP,1608	
DR67	2007-000090	BY230285	R-CHIP;10Kohm,5%,1/10W,TP,1608	
DR68	2007-000090	BY230285	R-CHIP;10Kohm,5%,1/10W,TP,1608	
DR69	2007-000084	BY230282	R-CHIP;4.7Kohm,5%,1/10W,TP,1608	
DR7	2007-000071	BY230341	R-CHIP;22ohm,5%,1/10W,TP,1608	
DR71	2007-000070	BY230274	R-CHIP;0ohm,5%,1/10W,TP,1608	
DR72	2007-000070	BY230274	R-CHIP;0ohm,5%,1/10W,TP,1608	
DR74	2007-000070	BY230274	R-CHIP;0ohm,5%,1/10W,TP,1608	
DR75	2007-000070	BY230274	R-CHIP;0ohm,5%,1/10W,TP,1608	
DR76	2007-000070	BY230274	R-CHIP;0ohm,5%,1/10W,TP,1608	
DR77	2007-000082	BY230233	R-CHIP;3.3Kohm,5%,1/10W,TP,1608	
DR78	2007-000082	BY230233	R-CHIP;3.3Kohm,5%,1/10W,TP,1608	
DR79	2007-000070	BY230274	R-CHIP;0ohm,5%,1/10W,TP,1608	
DR8	2007-000071	BY230341	R-CHIP;22ohm,5%,1/10W,TP,1608	
DR80	2007-000070	BY230274	R-CHIP;0ohm,5%,1/10W,TP,1608	
DR81	2007-000084	BY230282	R-CHIP;4.7Kohm,5%,1/10W,TP,1608	
DR82	2007-000084	BY230282	R-CHIP;4.7Kohm,5%,1/10W,TP,1608	
DR84	2007-000090	BY230285	R-CHIP;10Kohm,5%,1/10W,TP,1608	
DR85	2007-000090	BY230285	R-CHIP;10Kohm,5%,1/10W,TP,1608	
DR86	2007-000090	BY230285	R-CHIP;10Kohm,5%,1/10W,TP,1608	
DR87	2007-000090	BY230285	R-CHIP;10Kohm,5%,1/10W,TP,1608	
DR88	2007-000090	BY230285	R-CHIP;10Kohm,5%,1/10W,TP,1608	
DR89	2007-000090	BY230285	R-CHIP;10Kohm,5%,1/10W,TP,1608	
DR9	2007-000071	BY230341	R-CHIP;22ohm,5%,1/10W,TP,1608	
DR90	2007-000090	BY230285	R-CHIP;10Kohm,5%,1/10W,TP,1608	
DR91	2007-000090	BY230285	R-CHIP;10Kohm,5%,1/10W,TP,1608	
DR92	2007-000090	BY230285	R-CHIP;10Kohm,5%,1/10W,TP,1608	
DR95	2007-000071	BY230341	R-CHIP;22ohm,5%,1/10W,TP,1608	
DR96	2007-000071	BY230341	R-CHIP;22ohm,5%,1/10W,TP,1608	
DR97	2007-000071	BY230341	R-CHIP;22ohm,5%,1/10W,TP,1608	
DR98	2007-000071	BY230341	R-CHIP;22ohm,5%,1/10W,TP,1608	
FB23	2007-000029	70795513	R-CHIP;0ohm,5%,1/8W,TP,2012	
PC1	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
PC10	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
PC11	2203-000440	BY130462	C-CER,CHIP;1nF,10%,50V,X7R,TP,1608,-	
PC12	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
PC13	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
PC14	2203-000440	BY130462	C-CER,CHIP;1nF,10%,50V,X7R,TP,1608,-	
PC15	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
PC16	2203-000440	BY130462	C-CER,CHIP;1nF,10%,50V,X7R,TP,1608,-	
PC17	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
PC18	2203-001607	BY130451	C-CER,CHIP;0.22nF,5%,50V,NP0,-,1608	
PC19	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
PC2	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
PC20	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
PC3	2203-000384	BY130521	C-CER,CHIP;0.015NF,5%,50V,C0G,TP,1608	
PC4	2203-000384	BY130521	C-CER,CHIP;0.015NF,5%,50V,C0G,TP,1608	
PC5	2203-000440	BY130462	C-CER,CHIP;1nF,10%,50V,X7R,TP,1608,-	
PC6	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
PC7	2203-000440	BY130462	C-CER,CHIP;1nF,10%,50V,X7R,TP,1608,-	
PC8	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
PC9	2203-000440	BY130462	C-CER,CHIP;1nF,10%,50V,X7R,TP,1608,-	
PE1	2402-000007	BY130502	C-AL,SMD;22uF,20%,6.3V,GP,TP,4.3x4.3x5.	
PE2	2402-000007	BY130502	C-AL,SMD;22uF,20%,6.3V,GP,TP,4.3x4.3x5.	
PE3	2402-000176	BY130504	C-AL,SMD;10uF,20%,16V,GP,TP,4.3x4.3x5.4	
PE4	2402-000176	BY130504	C-AL,SMD;10uF,20%,16V,GP,TP,4.3x4.3x5.4	
PE5	2402-000170	BY130503	C-AL,SMD;1uF,20%,50V,GP,TP,4.3x4.3x5.4,	
PIC1	1205-001988	BY631248	IC-DATA COMM./GEN.;TSB41AB1-PAP,QFP,64P,	
PL1	2007-000033	70693337	R-CHIP;0ohm,5%,1/4W,TP,3216	
PL2	2007-000029	70795513	R-CHIP;0ohm,5%,1/8W,TP,2012	
PL3	2007-000033	70693337	R-CHIP;0ohm,5%,1/4W,TP,3216	
PR1	3301-001419	BY330073	BEAD-SMD;-,220,-,500,TP,-,0.3	
PR10	2007-000090	BY230285	R-CHIP;10Kohm,5%,1/10W,TP,1608	
PR12	2007-000078	BY230279	R-CHIP;1Kohm,5%,1/10W,TP,1608	
PR13	2007-000078	BY230279	R-CHIP;1Kohm,5%,1/10W,TP,1608	

Loc.No	Reference No	TSB Part No	Description ; Specification	Remark
PR14	2007-000078	BY230279	R-CHIP;1Kohm,5%,1/10W,TP,1608	
PR15	2007-000078	BY230279	R-CHIP;1Kohm,5%,1/10W,TP,1608	
PR16	2007-000078	BY230279	R-CHIP;1Kohm,5%,1/10W,TP,1608	
PR17	2007-000078	BY230279	R-CHIP;1Kohm,5%,1/10W,TP,1608	
PR18	2007-000965	BY230303	R-CHIP;5.1Kohm,5%,1/10W,TP,1608	
PR19	2007-001044	BY230362	R-CHIP;56ohm,5%,1/10W,TP,1608	
PR2	2007-000078	BY230279	R-CHIP;1Kohm,5%,1/10W,TP,1608	
PR20	2007-001044	BY230362	R-CHIP;56ohm,5%,1/10W,TP,1608	
PR21	2007-001044	BY230362	R-CHIP;56ohm,5%,1/10W,TP,1608	
PR22	2007-001044	BY230362	R-CHIP;56ohm,5%,1/10W,TP,1608	
PR23	2007-001056	BY230273	R-CHIP;6.2Kohm,5%,1/10W,TP,1608	
PR24	2007-000070	BY230274	R-CHIP;0ohm,5%,1/10W,TP,1608	
PR4	2007-000090	BY230285	R-CHIP;10Kohm,5%,1/10W,TP,1608	
PR5	2007-000070	BY230274	R-CHIP;0ohm,5%,1/10W,TP,1608	
PR60	2007-000074	BY230276	R-CHIP;100ohm,5%,1/10W,TP,1608	
PR9	2007-000090	BY230285	R-CHIP;10Kohm,5%,1/10W,TP,1608	
PRA1	2011-000002	BY230365	R-NET;22OHM,5%,1/16W,L,CHIP,8P,TP,32	
PRA2	2011-000002	BY230365	R-NET;22OHM,5%,1/16W,L,CHIP,8P,TP,32	
PY1	2801-004021	BY633022	CRYSTAL-SMD;24.576MHz,20ppm,28-AAN,12pF,	
R1	2007-001014	BY230361	R-CHIP;51OHM,5%,1/10W,DA,TP,1608	
R213	2007-001044	BY230362	R-CHIP;56ohm,5%,1/10W,TP,1608	
R214	2007-001044	BY230362	R-CHIP;56ohm,5%,1/10W,TP,1608	
R215	2007-001044	BY230362	R-CHIP;56ohm,5%,1/10W,TP,1608	
R216	2007-001044	BY230362	R-CHIP;56ohm,5%,1/10W,TP,1608	
R217	2007-001044	BY230362	R-CHIP;56ohm,5%,1/10W,TP,1608	
R218	2007-001044	BY230362	R-CHIP;56ohm,5%,1/10W,TP,1608	
R219	2007-001044	BY230362	R-CHIP;56ohm,5%,1/10W,TP,1608	
R220	2007-001044	BY230362	R-CHIP;56ohm,5%,1/10W,TP,1608	
R221	3301-001309	BY330076	BEAD-SMD;47ohm,1.6x0.8x0.8mm,500mA,TP,-	
R222	2007-001014	BY230361	R-CHIP;51OHM,5%,1/10W,DA,TP,1608	
R223	3301-001309	BY330076	BEAD-SMD;47ohm,1.6x0.8x0.8mm,500mA,TP,-	
R224	2007-001014	BY230361	R-CHIP;51OHM,5%,1/10W,DA,TP,1608	
R225	3301-001309	BY330076	BEAD-SMD;47ohm,1.6x0.8x0.8mm,500mA,TP,-	
R226	2007-001014	BY230361	R-CHIP;51OHM,5%,1/10W,DA,TP,1608	
R227	3301-001309	BY330076	BEAD-SMD;47ohm,1.6x0.8x0.8mm,500mA,TP,-	
R228	2007-001167	BY230304	R-CHIP;75ohm,5%,1/10W,TP,1608	
R229	2007-001044	BY230362	R-CHIP;56ohm,5%,1/10W,TP,1608	
R230	2007-001044	BY230362	R-CHIP;56ohm,5%,1/10W,TP,1608	
R232	2007-001044	BY230362	R-CHIP;56ohm,5%,1/10W,TP,1608	
R234	2007-001044	BY230362	R-CHIP;56ohm,5%,1/10W,TP,1608	
R237	2007-001044	BY230362	R-CHIP;56ohm,5%,1/10W,TP,1608	
R238	2007-001044	BY230362	R-CHIP;56ohm,5%,1/10W,TP,1608	
R239	2007-001044	BY230362	R-CHIP;56ohm,5%,1/10W,TP,1608	
R240	2007-001044	BY230362	R-CHIP;56ohm,5%,1/10W,TP,1608	
R241	2007-001014	BY230361	R-CHIP;51OHM,5%,1/10W,DA,TP,1608	
R242	2007-001014	BY230361	R-CHIP;51OHM,5%,1/10W,DA,TP,1608	
R243	2007-001014	BY230361	R-CHIP;51OHM,5%,1/10W,DA,TP,1608	
R246	2007-001044	BY230362	R-CHIP;56ohm,5%,1/10W,TP,1608	
R247	2007-000071	BY230341	R-CHIP;22ohm,5%,1/10W,TP,1608	
R248	2007-000071	BY230341	R-CHIP;22ohm,5%,1/10W,TP,1608	
R67	2007-001167	BY230304	R-CHIP;75ohm,5%,1/10W,TP,1608	
R68	2007-001167	BY230304	R-CHIP;75ohm,5%,1/10W,TP,1608	
R69	2007-001167	BY230304	R-CHIP;75ohm,5%,1/10W,TP,1608	
R70	2007-001167	BY230304	R-CHIP;75ohm,5%,1/10W,TP,1608	
RC1	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
RC2	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
RC3	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
RC4	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
RC5	2203-001683	BY130486	C-CER,CHIP;0.068nF,5%,50V,NP0,TP,1608	
RE1	2402-001096	BY130508	C-AL,SMD;220UF,20%,16V,GP,TP,6.6X6.6X7.	
RE2	2402-001237	BY130509	C-AL,SMD;330uF,##20%,6.3V,-,REEL,6.3X7.	
RE3	2402-000007	BY130502	C-AL,SMD;22uF,20%,6.3V,GP,TP,4.3x4.3x5.	
RE4	2402-001237	BY130509	C-AL,SMD;330uF,##20%,6.3V,-,REEL,6.3X7.	
RIC1	1203-003182	BY631242	IC-POSI.FIXED REG.;LP3965,TO-263,5P,10.1	
RIC2	1203-002612	BY631236	IC-POSI.ADJUST REG.;3966,TO-263,5P,10.16	
RL1	2703-000398	BY330078	INDUCTOR-SMD;10uH,10%,3225	
RL2	2007-000033	70693337	R-CHIP;0ohm,5%,1/4W,TP,3216	
RL3	2007-000033	70693337	R-CHIP;0ohm,5%,1/4W,TP,3216	
RL5	2007-000033	70693337	R-CHIP;0ohm,5%,1/4W,TP,3216	
RL6	2007-000033	70693337	R-CHIP;0ohm,5%,1/4W,TP,3216	
RL7	2007-000033	70693337	R-CHIP;0ohm,5%,1/4W,TP,3216	
RP1	2011-000686	BY230368	R-NET;56OHM,5%,1/16W,L,CHIP,8P,TP	
RP10	2011-000686	BY230368	R-NET;56OHM,5%,1/16W,L,CHIP,8P,TP	
RP12	2011-000686	BY230368	R-NET;56OHM,5%,1/16W,L,CHIP,8P,TP	
RP14	2011-000686	BY230368	R-NET;56OHM,5%,1/16W,L,CHIP,8P,TP	
RP15	2011-000686	BY230368	R-NET;56OHM,5%,1/16W,L,CHIP,8P,TP	
RP17	2011-000686	BY230368	R-NET;56OHM,5%,1/16W,L,CHIP,8P,TP	
RP18	2011-000686	BY230368	R-NET;56OHM,5%,1/16W,L,CHIP,8P,TP	
RP19	2011-000686	BY230368	R-NET;56OHM,5%,1/16W,L,CHIP,8P,TP	
RP20	2011-000686	BY230368	R-NET;56OHM,5%,1/16W,L,CHIP,8P,TP	
RP21	2011-000002	BY230365	R-NET;22OHM,5%,1/16W,L,CHIP,8P,TP,32	
RP22	2011-000002	BY230365	R-NET;22OHM,5%,1/16W,L,CHIP,8P,TP,32	
RP23	2011-000002	BY230365	R-NET;22OHM,5%,1/16W,L,CHIP,8P,TP,32	
RP24	2011-000002	BY230365	R-NET;22OHM,5%,1/16W,L,CHIP,8P,TP,32	
RP25	2011-001194	BY230370	R-NET;51ohm,5%,1/16W,L,CHIP,8P,TP	
RP26	2011-001194	BY230370	R-NET;51ohm,5%,1/16W,L,CHIP,8P,TP	
RP27	2011-001194	BY230370	R-NET;51ohm,5%,1/16W,L,CHIP,8P,TP	
RP28	2011-001194	BY230370	R-NET;51ohm,5%,1/16W,L,CHIP,8P,TP	
RP29	2011-001194	BY230370	R-NET;51ohm,5%,1/16W,L,CHIP,8P,TP	
RP3	2011-000686	BY230368	R-NET;56OHM,5%,1/16W,L,CHIP,8P,TP	
RP30	2011-001194	BY230370	R-NET;51ohm,5%,1/16W,L,CHIP,8P,TP	
RP31	2011-001194	BY230370	R-NET;51ohm,5%,1/16W,L,CHIP,8P,TP	
RP34	2011-001194	BY230370	R-NET;51ohm,5%,1/16W,L,CHIP,8P,TP	
RP5	2011-000686	BY230368	R-NET;56OHM,5%,1/16W,L,CHIP,8P,TP	
RP7	2011-000686	BY230368	R-NET;56OHM,5%,1/16W,L,CHIP,8P,TP	
RR3	2007-000964	BY230007	R-CHIP;5.1Kohm,5%,1/8W,TP,2012	
RR4	2007-000300	70795516	R-CHIP;10Kohm,5%,1/8W,TP,2012	
TC1	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
TC11	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
TC12	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
TC14	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
TC16	2203-000206	BY130352	C-CER,CHIP;100nF,10%,50V,X7R,TP,2012	
TC17	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
TC18	2203-000206	BY130352	C-CER,CHIP;100nF,10%,50V,X7R,TP,2012	
TC2	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
TC20	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
TC21	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
TC23	2203-000206	BY130352	C-CER,CHIP;100nF,10%,50V,X7R,TP,2012	
TC24	2203-002793	BY130032	C-CER,CHIP;1000nF,+80-20%,25V,Y5V,2012	
TC25	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
TC3	2203-001658	BY130485	C-CER,CHIP;0.047nF,5%,50V,NP0,TP,1608	
TC31	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
TC34	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
TC38	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
TC4	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
TC41	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
TC48	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
TC5	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
TC55	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
TC61	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
TC67	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
TC7	2203-000206	BY130352	C-CER,CHIP;100nF,10%,50V,X7R,TP,2012	
TC74	2203-000646	BY130514	C-CER,CHIP;0.024NF,5%,50V,C0G,TP,1608	
TC75	2203-000646	BY130514	C-CER,CHIP;0.024NF,5%,50V,C0G,TP,1608	
TC76	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
TC78	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
TC8	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
TC80	2203-000206	BY130352	C-CER,CHIP;100nF,10%,50V,X7R,TP,2012	
TC9	2203-000206	BY130352	C-CER,CHIP;100nF,10%,50V,X7R,TP,2012	
TC90	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
TC91	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
TC92	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	

Loc.No	Reference No	TSB Part No	Description ; Specification	Remark
TE2	2402-000176	BY130504	C-AL,SMD;10uF,20%,16V,GP,TP,4.3x4.3x5.4	
TE3	2402-000176	BY130504	C-AL,SMD;10uF,20%,16V,GP,TP,4.3x4.3x5.4	
TE4	2402-000176	BY130504	C-AL,SMD;10uF,20%,16V,GP,TP,4.3x4.3x5.4	
TE5	2402-000176	BY130504	C-AL,SMD;10uF,20%,16V,GP,TP,4.3x4.3x5.4	
TIC1	1204-002235	BY631247	IC-PAL/NTSC DECODER;TVP5146PFP,PQFP,80P,	
TIC2	1203-002577	BY631235	IC-POSI.FIXED REG.;MM1561J,SOP,7P,173MIL	
TL7	2007-000033	70693337	R-CHIP;0ohm,5%,1/4W,TP,3216	
TL8	2007-000033	70693337	R-CHIP;0ohm,5%,1/4W,TP,3216	
TL9	2007-000033	70693337	R-CHIP;0ohm,5%,1/4W,TP,3216	
TNR50	2011-000475	BY230366	R-NET;33OHM,5%,1/16W,L,CHIP,8P,TP,32	
TNR54	2011-000475	BY230366	R-NET;33OHM,5%,1/16W,L,CHIP,8P,TP,32	
TNR60	2011-000515	BY230367	R-NET;4.7Kohm,5%,1/16W,L,CHIP,8P,TP	
TNR66	2011-000515	BY230367	R-NET;4.7Kohm,5%,1/16W,L,CHIP,8P,TP	
TR28	2007-000070	BY230274	R-CHIP;0ohm,5%,1/10W,TP,1608	
TR29	2007-000070	BY230274	R-CHIP;0ohm,5%,1/10W,TP,1608	
TR30	2007-000084	BY230282	R-CHIP;4.7Kohm,5%,1/10W,TP,1608	
TR33	2007-000070	BY230274	R-CHIP;0ohm,5%,1/10W,TP,1608	
TR34	2007-000074	BY230276	R-CHIP;100ohm,5%,1/10W,TP,1608	
TR35	2007-000074	BY230276	R-CHIP;100ohm,5%,1/10W,TP,1608	
TR36	2007-000084	BY230282	R-CHIP;4.7Kohm,5%,1/10W,TP,1608	
TR37	2007-000084	BY230282	R-CHIP;4.7Kohm,5%,1/10W,TP,1608	
TR40	3301-001419	BY330073	BEAD-SMD;-,220,-,500,TP,-,0.3	
TR43	2007-000113	BY230328	R-CHIP;33ohm,5%,1/10W,TP,1608	
TR44	2007-000113	BY230328	R-CHIP;33ohm,5%,1/10W,TP,1608	
TR69	2007-000124	BY230295	R-CHIP;2.2Kohm,5%,1/10W,TP,1608	
TR70	2007-000084	BY230282	R-CHIP;4.7Kohm,5%,1/10W,TP,1608	
TR711	2007-000084	BY230282	R-CHIP;4.7Kohm,5%,1/10W,TP,1608	
TR72	2007-000084	BY230282	R-CHIP;4.7Kohm,5%,1/10W,TP,1608	
TR73	2007-000074	BY230276	R-CHIP;100ohm,5%,1/10W,TP,1608	
TR74	2007-000102	BY230292	R-CHIP;100Kohm,5%,1/10W,TP,1608	
TR75	2007-000090	BY230285	R-CHIP;10Kohm,5%,1/10W,TP,1608	
TX1	2801-004183	BY633026	CRYSTAL-SMD;14.31818MHZ,30PPM,28-AAN,16P	
U23	1105-001530	BY631228	IC-DRAM;K4H561638,16Mx16Bit,TSOPII,66P	
U24	1105-001530	BY631228	IC-DRAM;K4H561638,16Mx16Bit,TSOPII,66P	
U25	1203-003038	BY631238	IC-POSI.ADJUST REG.;LP2995,SO,8P,4.9x3.9	
U34	0401-000008	BY430108	DIODE-SWITCHING;DAN217,80V,100MA,SOT-23,	
Y3	2801-004182	BY633025	CRYSTAL-SMD;13.5MHZ,10PPM,28-AAN,24PF,60	
P003	**AK94-00015A**	**BY630385**	**ASSY SORT-JACK;DVD-VR300,VCR+DVD RECODER**	
AC14	2203-001607	BY130451	C-CER,CHIP;0.22nF,5%,50V,NP0,-,1608	
AC15	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
AC16	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
AC17	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
AC21	2203-000357	BY130442	C-CER,CHIP;0.15NF,5%,50V,C0G,TP,1608	
AC22	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
AC23	2203-000125	BY130520	C-CER,CHIP;1.2nF,10%,50V,X7R,TP,1608,-	
AC24	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
AC25	2203-000357	BY130442	C-CER,CHIP;0.15NF,5%,50V,C0G,TP,1608	
AC26	2203-000125	BY130520	C-CER,CHIP;1.2nF,10%,50V,X7R,TP,1608,-	
AC27	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
AC9	2203-001607	BY130451	C-CER,CHIP;0.22nF,5%,50V,NP0,-,1608	
AD1	0407-000114	BY430113	DIODE-ARRAY;DAN202K,80V,100mA,CA2-3,SOT-	
AD2	0407-000114	BY430113	DIODE-ARRAY;DAN202K,80V,100mA,CA2-3,SOT-	
AD5	0407-000114	BY430113	DIODE-ARRAY;DAN202K,80V,100mA,CA2-3,SOT-	
AE11	2401-000913	BY130043	C-AL;22uF,20%,16V,GP,TP,5x11,5	
AE12	2401-002144	BY130049	C-AL;47uF,20%,16V,GP,TP,5x11,5	
AE13	2401-000913	BY130043	C-AL;22uF,20%,16V,GP,TP,5x11,5	
AE14	2401-002144	BY130049	C-AL;47uF,20%,16V,GP,TP,5x11,5	
AE3	2401-000913	BY130043	C-AL;22uF,20%,16V,GP,TP,5x11,5	
AE5	2401-000913	BY130043	C-AL;22uF,20%,16V,GP,TP,5x11,5	
AE6	2401-001250	70796211	C-AL;4.7uF,20%,35V,GP,TP,4x5,5	
AE7	2401-001250	70796211	C-AL;4.7uF,20%,35V,GP,TP,4x5,5	
AIC4	1201-000163	BY631232	IC-OP AMP;4560,SOP,8P,173MIL,DUAL,100V/m	
AIC5	1201-000163	BY631232	IC-OP AMP;4560,SOP,8P,173MIL,DUAL,100V/m	
AL3	3301-001419	BY330073	BEAD-SMD;-,220,-,500,TP,-,0.3	
AL4	3301-001419	BY330073	BEAD-SMD;-,220,-,500,TP,-,0.3	

Loc.No	Reference No	TSB Part No	Description ; Specification	Remark
AQ1	0504-000128	BY530074	TR-DIGITAL;-,NPN,200MW,22K/22K,SOT-23,TP	
AQ2	0504-000156	BY530075	TR-DIGITAL;KSR2103,PNP,200MW,22K/22K,SOT	
AQ3	0501-000341	BY530073	TR-SMALL SIGNAL;KSC1623-L,NPN,200mW,SOT-	
AQ4	0504-000128	BY530074	TR-DIGITAL;-,NPN,200MW,22K/22K,SOT-23,TP	
AQ5	0504-000156	BY530075	TR-DIGITAL;KSR2103,PNP,200MW,22K/22K,SOT	
AQ6	0501-000341	BY530073	TR-SMALL SIGNAL;KSC1623-L,NPN,200mW,SOT-	
AQ7	0504-000128	BY530074	TR-DIGITAL;-,NPN,200MW,22K/22K,SOT-23,TP	
AQ8	0504-000156	BY530075	TR-DIGITAL;KSR2103,PNP,200MW,22K/22K,SOT	
AR12	2007-000076	BY230310	R-CHIP;330ohm,5%,1/10W,TP,1608	
AR13	2007-000076	BY230310	R-CHIP;330ohm,5%,1/10W,TP,1608	
AR14	2007-000090	BY230285	R-CHIP;10Kohm,5%,1/10W,TP,1608	
AR15	2007-000075	BY230277	R-CHIP;220ohm,5%,1/10W,TP,1608	
AR16	2007-000075	BY230277	R-CHIP;220ohm,5%,1/10W,TP,1608	
AR17	2007-000078	BY230279	R-CHIP;1Kohm,5%,1/10W,TP,1608	
AR18	2007-000075	BY230277	R-CHIP;220ohm,5%,1/10W,TP,1608	
AR28	2007-000090	BY230285	R-CHIP;10Kohm,5%,1/10W,TP,1608	
AR29	2007-000075	BY230277	R-CHIP;220ohm,5%,1/10W,TP,1608	
AR30	2007-000075	BY230277	R-CHIP;220ohm,5%,1/10W,TP,1608	
AR31	2007-000078	BY230279	R-CHIP;1Kohm,5%,1/10W,TP,1608	
AR32	2007-000075	BY230277	R-CHIP;220ohm,5%,1/10W,TP,1608	
AR33	2007-000132	BY230354	R-CHIP;180Kohm,5%,1/10W,TP,1608	
AR34	2007-000102	BY230292	R-CHIP;100Kohm,5%,1/10W,TP,1608	
AR35	2007-000102	BY230292	R-CHIP;100Kohm,5%,1/10W,TP,1608	
AR36	2007-000074	BY230276	R-CHIP;100ohm,5%,1/10W,TP,1608	
AR37	2007-000132	BY230354	R-CHIP;180Kohm,5%,1/10W,TP,1608	
AR38	2007-000102	BY230292	R-CHIP;100Kohm,5%,1/10W,TP,1608	
AR39	2007-000102	BY230292	R-CHIP;100Kohm,5%,1/10W,TP,1608	
AR40	2007-000074	BY230276	R-CHIP;100ohm,5%,1/10W,TP,1608	
AR41	2007-001179	BY230305	R-CHIP;8.2Kohm,5%,1/10W,TP,1608	
AR42	2007-000090	BY230285	R-CHIP;10Kohm,5%,1/10W,TP,1608	
AR43	2007-000092	BY230287	R-CHIP;15Kohm,5%,1/10W,TP,1608	
AR44	2007-000102	BY230292	R-CHIP;100Kohm,5%,1/10W,TP,1608	
AR45	2007-000102	BY230292	R-CHIP;100Kohm,5%,1/10W,TP,1608	
AR46	2007-001179	BY230305	R-CHIP;8.2Kohm,5%,1/10W,TP,1608	
AR47	2007-000090	BY230285	R-CHIP;10Kohm,5%,1/10W,TP,1608	
AR48	2007-000092	BY230287	R-CHIP;15Kohm,5%,1/10W,TP,1608	
AR49	2007-000102	BY230292	R-CHIP;100Kohm,5%,1/10W,TP,1608	
AR50	2007-000102	BY230292	R-CHIP;100Kohm,5%,1/10W,TP,1608	
AZ1	0403-001083	BY430111	DIODE-ZENER;UDZ9.1B,8.85-9.23V,200MW,UMD	
AZ2	0403-001083	BY430111	DIODE-ZENER;UDZ9.1B,8.85-9.23V,200MW,UMD	
AZ3	0403-001083	BY430111	DIODE-ZENER;UDZ9.1B,8.85-9.23V,200MW,UMD	
AZ4	0403-001083	BY430111	DIODE-ZENER;UDZ9.1B,8.85-9.23V,200MW,UMD	
BR2	2007-000076	BY230310	R-CHIP;330ohm,5%,1/10W,TP,1608	
BT501	AC43-12002P	BY634817	BATTERY;VL2330-1HF,3V,OD23XH3.0,	
C401	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
C402	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
C403	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
C404	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
C405	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
C4M05	2401-000913	BY130043	C-AL;22uF,20%,16V,GP,TP,5x11,5	
C4M12	2203-000257	BY130440	C-CER,CHIP;10nF,10%,50V,X7R,TP,1608	
C4M13	2203-005065	BY130479	C-CER,CHIP;1000nF,+80-20%,10V,Y5V,-,1608	
C4M14	2401-000415	BY130492	C-AL;10uF,20%,16V,GP,TP,5x11,5	
C4M15	2203-000257	BY130440	C-CER,CHIP;10nF,10%,50V,X7R,TP,1608	
C4M22	2401-000598	BY130042	C-AL;1uF,20%,50V,GP,TP,4x7,5	
C4M23	2203-005065	BY130479	C-CER,CHIP;1000nF,+80-20%,10V,Y5V,-,1608	
C4M24	2203-005065	BY130479	C-CER,CHIP;1000nF,+80-20%,10V,Y5V,-,1608	
C4M25	2203-001634	BY130460	C-CER,CHIP;33nF,10%,50V,X7R,TP,1608,1.6m	
C4M26	2401-001250	70796211	C-AL;4.7uF,20%,35V,GP,TP,4x5,5	
C4M27	2401-000598	BY130042	C-AL;1uF,20%,50V,GP,TP,4x7,5	
C4M28	2203-005065	BY130479	C-CER,CHIP;1000nF,+80-20%,10V,Y5V,-,1608	
C4M29	2401-000661	BY130274	C-AL;2.2uF,20%,50V,GP,TP,5x11,5	
C4M30	2401-000598	BY130042	C-AL;1uF,20%,50V,GP,TP,4x7,5	
C4M31	2401-002144	BY130049	C-AL;47uF,20%,16V,GP,TP,5x11,5	
C4M32	2203-000257	BY130440	C-CER,CHIP;10nF,10%,50V,X7R,TP,1608	
C4M33	2203-005065	BY130479	C-CER,CHIP;1000nF,+80-20%,10V,Y5V,-,1608	

Loc.No	Reference No	TSB Part No	Description ; Specification	Remark
C4M34	2203-005065	BY130479	C-CER,CHIP;1000nF,+80-20%,10V,Y5V,-,1608	
C4M35	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
C4M36	2401-001250	70796211	C-AL;4.7uF,20%,35V,GP,TP,4x5,5	
C4M37	2401-000913	BY130043	C-AL;22uF,20%,16V,GP,TP,5x11,5	
C4M38	2401-001250	70796211	C-AL;4.7uF,20%,35V,GP,TP,4x5,5	
C4M39	2401-000913	BY130043	C-AL;22uF,20%,16V,GP,TP,5x11,5	
C4M40	2401-001250	70796211	C-AL;4.7uF,20%,35V,GP,TP,4x5,5	
C4M41	2401-001250	70796211	C-AL;4.7uF,20%,35V,GP,TP,4x5,5	
C4M42	2203-005065	BY130479	C-CER,CHIP;1000nF,+80-20%,10V,Y5V,-,1608	
C4M43	2401-001250	70796211	C-AL;4.7uF,20%,35V,GP,TP,4x5,5	
C4M44	2401-001250	70796211	C-AL;4.7uF,20%,35V,GP,TP,4x5,5	
C4M45	2203-005065	BY130479	C-CER,CHIP;1000nF,+80-20%,10V,Y5V,-,1608	
C4M46	2203-005065	BY130479	C-CER,CHIP;1000nF,+80-20%,10V,Y5V,-,1608	
C4M47	2203-000257	BY130440	C-CER,CHIP;10nF,10%,50V,X7R,TP,1608	
C800	2401-001730	70795625	C-AL;10UF,20%,50V,GP,TP,5X11,5	
C801	2401-002144	BY130049	C-AL;47uF,20%,16V,GP,TP,5x11,5	
C802	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
C803	2401-002144	BY130049	C-AL;47uF,20%,16V,GP,TP,5x11,5	
C804	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
C805	2401-001730	70795625	C-AL;10UF,20%,50V,GP,TP,5X11,5	
C806	2401-001730	70795625	C-AL;10UF,20%,50V,GP,TP,5X11,5	
C807	2401-001730	70795625	C-AL;10UF,20%,50V,GP,TP,5X11,5	
C808	2401-001730	70795625	C-AL;10UF,20%,50V,GP,TP,5X11,5	
C809	2401-001730	70795625	C-AL;10UF,20%,50V,GP,TP,5X11,5	
C811	2401-001730	70795625	C-AL;10UF,20%,50V,GP,TP,5X11,5	
C813	2401-001730	70795625	C-AL;10UF,20%,50V,GP,TP,5X11,5	
C814	2401-001730	70795625	C-AL;10UF,20%,50V,GP,TP,5X11,5	
C817	2401-001730	70795625	C-AL;10UF,20%,50V,GP,TP,5X11,5	
C819	2401-001730	70795625	C-AL;10UF,20%,50V,GP,TP,5X11,5	
C820	2401-001730	70795625	C-AL;10UF,20%,50V,GP,TP,5X11,5	
C821	2401-001730	70795625	C-AL;10UF,20%,50V,GP,TP,5X11,5	
C824	2401-001730	70795625	C-AL;10UF,20%,50V,GP,TP,5X11,5	
C825	2401-001730	70795625	C-AL;10UF,20%,50V,GP,TP,5X11,5	
C826	2401-001730	70795625	C-AL;10UF,20%,50V,GP,TP,5X11,5	
C827	2401-001730	70795625	C-AL;10UF,20%,50V,GP,TP,5X11,5	
C828	2401-002144	BY130049	C-AL;47uF,20%,16V,GP,TP,5x11,5	
C829	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
C830	2401-001479	BY130015	C-AL;470UF,20%,10V,GP,TP,6.3*11MM,-	
C832	2401-002144	BY130049	C-AL;47uF,20%,16V,GP,TP,5x11,5	
C833	2203-000998	BY130446	C-CER,CHIP;0.047NF,5%,50V,C0G,TP,1608	
C834	2203-000236	BY130439	C-CER,CHIP;0.1NF,5%,50V,C0G,TP,1608	
C835	2401-001250	70796211	C-AL;4.7uF,20%,35V,GP,TP,4x5,5	
C836	2401-001730	70795625	C-AL;10UF,20%,50V,GP,TP,5X11,5	
C837	2401-001730	70795625	C-AL;10UF,20%,50V,GP,TP,5X11,5	
C838	2401-001730	70795625	C-AL;10UF,20%,50V,GP,TP,5X11,5	
C839	2401-001730	70795625	C-AL;10UF,20%,50V,GP,TP,5X11,5	
C840	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
C841	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
C842	2401-001730	70795625	C-AL;10UF,20%,50V,GP,TP,5X11,5	
C843	2203-000783	BY130435	C-CER,CHIP;0.33NF,5%,50V,C0G,TP,1608	
C844	2203-000783	BY130435	C-CER,CHIP;0.33NF,5%,50V,C0G,TP,1608	
C845	2203-000783	BY130435	C-CER,CHIP;0.33NF,5%,50V,C0G,TP,1608	
C846	2203-000783	BY130435	C-CER,CHIP;0.33NF,5%,50V,C0G,TP,1608	
CE401	2401-001479	BY130015	C-AL;470UF,20%,10V,GP,TP,6.3*11MM,-	
CE76	2401-003480	BY130339	C-AL;1000UF,20%,10V,LZ,TP,10X16MM,5	
CN3	3711-005612	BY634828	CONNECTOR-HEADER;BOX,30P,2R,2mm,STRAIGHT	
CN4	3711-005612	BY634828	CONNECTOR-HEADER;BOX,30P,2R,2mm,STRAIGHT	
CN5	AC37-00027A	BY634826	CONNECTOR-HEADER;20045WS,X-11,T8.5,W17.4	
CNL1	3301-001419	BY330073	BEAD-SMD;-,220,-,500,TP,-,0.3	
CNL2	3301-001419	BY330073	BEAD-SMD;-,220,-,500,TP,-,0.3	
CNR1	2007-000070	BY230274	R-CHIP;0ohm,5%,1/10W,TP,1608	
CNR11	2007-000070	BY230274	R-CHIP;0ohm,5%,1/10W,TP,1608	
CNR12	2007-000070	BY230274	R-CHIP;0ohm,5%,1/10W,TP,1608	
CNR13	2007-000070	BY230274	R-CHIP;0ohm,5%,1/10W,TP,1608	
CNR14	2007-000070	BY230274	R-CHIP;0ohm,5%,1/10W,TP,1608	
CNR15	2007-000070	BY230274	R-CHIP;0ohm,5%,1/10W,TP,1608	
CNR16	2007-000070	BY230274	R-CHIP;0ohm,5%,1/10W,TP,1608	
CNR17	2007-000070	BY230274	R-CHIP;0ohm,5%,1/10W,TP,1608	
CNR18	2007-000070	BY230274	R-CHIP;0ohm,5%,1/10W,TP,1608	
CNR19	2007-000070	BY230274	R-CHIP;0ohm,5%,1/10W,TP,1608	
CNR20	2007-000084	BY230282	R-CHIP;4.7Kohm,5%,1/10W,TP,1608	
CNR21	2007-000084	BY230282	R-CHIP;4.7Kohm,5%,1/10W,TP,1608	
CNR22	2007-000070	BY230274	R-CHIP;0ohm,5%,1/10W,TP,1608	
CNR23	2007-000070	BY230274	R-CHIP;0ohm,5%,1/10W,TP,1608	
CNR24	2007-000070	BY230274	R-CHIP;0ohm,5%,1/10W,TP,1608	
CNR25	2007-000070	BY230274	R-CHIP;0ohm,5%,1/10W,TP,1608	
CNR26	2007-000070	BY230274	R-CHIP;0ohm,5%,1/10W,TP,1608	
CNR27	2007-000070	BY230274	R-CHIP;0ohm,5%,1/10W,TP,1608	
CNR28	2007-000070	BY230274	R-CHIP;0ohm,5%,1/10W,TP,1608	
CNR3	2007-000070	BY230274	R-CHIP;0ohm,5%,1/10W,TP,1608	
CNR30	2007-000070	BY230274	R-CHIP;0ohm,5%,1/10W,TP,1608	
CNR35	2007-000070	BY230274	R-CHIP;0ohm,5%,1/10W,TP,1608	
CNR36	2007-000070	BY230274	R-CHIP;0ohm,5%,1/10W,TP,1608	
CNR37	2007-000070	BY230274	R-CHIP;0ohm,5%,1/10W,TP,1608	
CNR38	2007-000070	BY230274	R-CHIP;0ohm,5%,1/10W,TP,1608	
CNR39	2007-000070	BY230274	R-CHIP;0ohm,5%,1/10W,TP,1608	
CNR4	2007-000070	BY230274	R-CHIP;0ohm,5%,1/10W,TP,1608	
CNR40	2007-000070	BY230274	R-CHIP;0ohm,5%,1/10W,TP,1608	
CNR5	2007-000070	BY230274	R-CHIP;0ohm,5%,1/10W,TP,1608	
CNR6	2007-000070	BY230274	R-CHIP;0ohm,5%,1/10W,TP,1608	
CNR7	2007-000070	BY230274	R-CHIP;0ohm,5%,1/10W,TP,1608	
CNR8	2007-000070	BY230274	R-CHIP;0ohm,5%,1/10W,TP,1608	
CNR9	2007-000070	BY230274	R-CHIP;0ohm,5%,1/10W,TP,1608	
CS01	2203-000257	BY130440	C-CER,CHIP;10nF,10%,50V,X7R,TP,1608	
CS02	2401-002144	BY130049	C-AL;47uF,20%,16V,GP,TP,5x11,5	
CS04	2401-000415	BY130492	C-AL;10uF,20%,16V,GP,TP,5x11,5	
CVL1	3301-001419	BY330073	BEAD-SMD;-,220,-,500,TP,-,0.3	
CVL2	3301-001419	BY330073	BEAD-SMD;-,220,-,500,TP,-,0.3	
CVL3	3301-001419	BY330073	BEAD-SMD;-,220,-,500,TP,-,0.3	
D501	0407-000114	BY430113	DIODE-ARRAY;DAN202K,80V,100mA,CA2-3,SOT-	
DOC2	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
DOC3	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
DOC4	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
DOE1	2401-000598	BY130042	C-AL;1uF,20%,50V,GP,TP,4x7,5	
DOE2	2401-001479	BY130015	C-AL;470UF,20%,10V,GP,TP,6.3*11MM,-	
DOIC1	AH14-10004R	BY631252	IC;M74HCU04,SOP,TAPE 14P	
DOIC2	3707-001060	BY634799	CONNECTOR-OPTICAL;PLUG,GP1FA550TZ,6DB,2.	
DOL1	2901-001273	BY330077	FILTER-EMI SMD;50V,2A,-,220pF,3.2x1.6x0.	
DOL2	3301-001419	BY330073	BEAD-SMD;-,220,-,500,TP,-,0.3	
DOL3	2703-000398	BY330078	INDUCTOR-SMD;10uH,10%,3225	
DOL4	3301-001419	BY330073	BEAD-SMD;-,220,-,500,TP,-,0.3	
DOR1	2007-000076	BY230310	R-CHIP;330ohm,5%,1/10W,TP,1608	
DOR2	2007-001167	BY230304	R-CHIP;75ohm,5%,1/10W,TP,1608	
DOR3	2007-000075	BY230277	R-CHIP;220ohm,5%,1/10W,TP,1608	
DOZ1	0403-001083	BY430111	DIODE-ZENER;UDZ9.1B,8.85-9.23V,200MW,UMD	
DOZ2	0403-001083	BY430111	DIODE-ZENER;UDZ9.1B,8.85-9.23V,200MW,UMD	
DVR1	2007-000070	BY230274	R-CHIP;0ohm,5%,1/10W,TP,1608	
DVR2	2007-000070	BY230274	R-CHIP;0ohm,5%,1/10W,TP,1608	
DVR3	2007-000070	BY230274	R-CHIP;0ohm,5%,1/10W,TP,1608	
DVR4	2007-000070	BY230274	R-CHIP;0ohm,5%,1/10W,TP,1608	
DVR5	3301-000314	BY330074	BEAD-SMD;120ohm,1.6x0.8x0.8mm,150mA,,,,	
DVR6	3301-000314	BY330074	BEAD-SMD;120ohm,1.6x0.8x0.8mm,150mA,,,,	
DVR7	3301-000314	BY330074	BEAD-SMD;120ohm,1.6x0.8x0.8mm,150mA,,,,	
DVR8	3301-000314	BY330074	BEAD-SMD;120ohm,1.6x0.8x0.8mm,150mA,,,,	
FJACK1	3708-000249	BY634821	CONNECTOR-FPC/FFC/PIC;27P,1.25MM,STRAIGH	
FVR1	3301-001419	BY330073	BEAD-SMD;-,220,-,500,TP,-,0.3	
FVR2	3301-001419	BY330073	BEAD-SMD;-,220,-,500,TP,-,0.3	
FVR3	3301-001419	BY330073	BEAD-SMD;-,220,-,500,TP,-,0.3	
FVR4	3301-001419	BY330073	BEAD-SMD;-,220,-,500,TP,-,0.3	
FVR5	3301-001419	BY330073	BEAD-SMD;-,220,-,500,TP,-,0.3	
FVR6	3301-001419	BY330073	BEAD-SMD;-,220,-,500,TP,-,0.3	
FVR7	3301-001419	BY330073	BEAD-SMD;-,220,-,500,TP,-,0.3	

Loc.No	Reference No	TSB Part No	Description ; Specification	Remark
IC4M01	1204-002222	BY631246	IC-SIGNAL PROCESSOR;LA72670M-MPB,QFP,80P	
IC801	AC14-12015T	BY631278	IC;SV1274/LA7274M,QFP,64PIN,-,-	
JACK1	3722-002166	BY634841	JACK-PIN;6P,SN/NI,RD/GN/WH/BU/BA/RD,ANG	
JK801	3722-002173	BY634842	JACK-PIN;6P,SN/NI,RED/WHT/YEL,ANGLE	
JL1	3301-001419	BY330073	BEAD-SMD;-,220,-,500,TP,-,0.3	
JL2	3301-001419	BY330073	BEAD-SMD;-,220,-,500,TP,-,0.3	
L401	2007-000033	70693337	R-CHIP;0ohm,5%,1/4W,TP,3216	
L4M01	2702-000106	70796003	INDUCTOR-RADIAL;100uH,10%,6.2x7.4mm	
L4M02	AC27-92001M	70795644	COIL-INDUCTOR;RH3.5X6.5RS,BEAD(RADIAL),-	
L801	2703-000002	BY330080	INDUCTOR-SMD;100uH,10%,3225	
L802	2703-000002	BY330080	INDUCTOR-SMD;100uH,10%,3225	
LS01	2703-000002	BY330080	INDUCTOR-SMD;100uH,10%,3225	
MCON1	3708-000270	70795501	CONNECTOR-FPC/FFC/PIC;33P,1.25MM,STRAIGH	
MCON2	3708-000270	70795501	CONNECTOR-FPC/FFC/PIC;33P,1.25MM,STRAIGH	
PC3	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
PC4	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
PC5	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
PC6	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
PC7	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
PE3	2401-002165	BY130280	C-AL;100uF,20%,16V,GP,TP,6.3x7,5	
PE4	2401-002165	BY130280	C-AL;100uF,20%,16V,GP,TP,6.3x7,5	
PE5	2401-002165	BY130280	C-AL;100uF,20%,16V,GP,TP,6.3x7,5	
PE6	2401-002165	BY130280	C-AL;100uF,20%,16V,GP,TP,6.3x7,5	
PE7	2401-002165	BY130280	C-AL;100uF,20%,16V,GP,TP,6.3x7,5	
PL3	2703-000398	BY330078	INDUCTOR-SMD;10uH,10%,3225	
PL4	2007-000033	70693337	R-CHIP;0ohm,5%,1/4W,TP,3216	
PL6	2007-000033	70693337	R-CHIP;0ohm,5%,1/4W,TP,3216	
PL7	2007-000033	70693337	R-CHIP;0ohm,5%,1/4W,TP,3216	
Q801	0501-000002	BY430105	TR-SMALL SIGNAL;KSA812,PNP,150MW,SOT-23,	
QS01	0501-000002	BY430105	TR-SMALL SIGNAL;KSA812,PNP,150MW,SOT-23,	
QS02	0501-000341	BY530073	TR-SMALL SIGNAL;KSC1623-L,NPN,200mW,SOT-	
QS03	0501-000341	BY530073	TR-SMALL SIGNAL;KSC1623-L,NPN,200mW,SOT-	
R201	2007-000124	BY230295	R-CHIP;2.2Kohm,5%,1/10W,TP,1608	
R202	2007-000124	BY230295	R-CHIP;2.2Kohm,5%,1/10W,TP,1608	
R203	2007-000074	BY230276	R-CHIP;100ohm,5%,1/10W,TP,1608	
R204	2007-000074	BY230276	R-CHIP;100ohm,5%,1/10W,TP,1608	
R301	2007-000078	BY230279	R-CHIP;1Kohm,5%,1/10W,TP,1608	
R302	2007-000078	BY230279	R-CHIP;1Kohm,5%,1/10W,TP,1608	
R401	2007-000450	BY230299	R-CHIP;180ohm,5%,1/10W,TP,1608	
R402	2007-000450	BY230299	R-CHIP;180ohm,5%,1/10W,TP,1608	
R4M09	2007-000077	BY230278	R-CHIP;470ohm,5%,1/10W,TP,1608	
R4M10	2007-000077	BY230278	R-CHIP;470ohm,5%,1/10W,TP,1608	
R4M16	2007-000078	BY230279	R-CHIP;1Kohm,5%,1/10W,TP,1608	
R4M17	2007-000078	BY230279	R-CHIP;1Kohm,5%,1/10W,TP,1608	
R4M18	2007-000084	BY230282	R-CHIP;4.7Kohm,5%,1/10W,TP,1608	
R803	2007-000575	BY230358	R-CHIP;220OHM,5%,1/4W,DA,TP,3216	
R804	2007-000115	BY230348	R-CHIP;82ohm,5%,1/10W,TP,1608	
R806	2007-000078	BY230279	R-CHIP;1Kohm,5%,1/10W,TP,1608	
R807	2007-000074	BY230276	R-CHIP;100ohm,5%,1/10W,TP,1608	
R808	2007-000074	BY230276	R-CHIP;100ohm,5%,1/10W,TP,1608	
R813	2007-000097	BY230290	R-CHIP;47Kohm,5%,1/10W,TP,1608	
R814	2007-000097	BY230290	R-CHIP;47Kohm,5%,1/10W,TP,1608	
R817	2007-000450	BY230299	R-CHIP;180ohm,5%,1/10W,TP,1608	
R818	2007-000450	BY230299	R-CHIP;180ohm,5%,1/10W,TP,1608	
R819	3301-001419	BY330073	BEAD-SMD;-,220,-,500,TP,-,0.3	
R820	3301-001419	BY330073	BEAD-SMD;-,220,-,500,TP,-,0.3	
R821	2007-000134	BY230298	R-CHIP;33Kohm,5%,1/10W,TP,1608	
R822	2007-000134	BY230298	R-CHIP;33Kohm,5%,1/10W,TP,1608	
R823	3301-001419	BY330073	BEAD-SMD;-,220,-,500,TP,-,0.3	
R851	3301-001419	BY330073	BEAD-SMD;-,220,-,500,TP,-,0.3	
R852	3301-001419	BY330073	BEAD-SMD;-,220,-,500,TP,-,0.3	
R853	2007-001167	BY230304	R-CHIP;75ohm,5%,1/10W,TP,1608	
R854	2007-000134	BY230298	R-CHIP;33Kohm,5%,1/10W,TP,1608	
R855	2007-000134	BY230298	R-CHIP;33Kohm,5%,1/10W,TP,1608	
R856	2007-001167	BY230304	R-CHIP;75ohm,5%,1/10W,TP,1608	
RS01	2007-001167	BY230304	R-CHIP;75ohm,5%,1/10W,TP,1608	
RS02	2007-000125	BY230296	R-CHIP;3.9Kohm,5%,1/10W,TP,1608	
RS03	2007-000094	BY230288	R-CHIP;22Kohm,5%,1/10W,TP,1608	
RS04	2007-000078	BY230279	R-CHIP;1Kohm,5%,1/10W,TP,1608	
RS05	2007-000078	BY230279	R-CHIP;1Kohm,5%,1/10W,TP,1608	
RS06	2007-001167	BY230304	R-CHIP;75ohm,5%,1/10W,TP,1608	
RS07	2007-000097	BY230290	R-CHIP;47Kohm,5%,1/10W,TP,1608	
RS08	2007-000097	BY230290	R-CHIP;47Kohm,5%,1/10W,TP,1608	
RS09	2007-000125	BY230296	R-CHIP;3.9Kohm,5%,1/10W,TP,1608	
RS10	2007-000077	BY230278	R-CHIP;470ohm,5%,1/10W,TP,1608	
SJACK	3722-001375	BY634838	JACK-DIN;4P,-,NI,BLK,-	
SVL1	3301-001419	BY330073	BEAD-SMD;-,220,-,500,TP,-,0.3	
SVL2	3301-001419	BY330073	BEAD-SMD;-,220,-,500,TP,-,0.3	
TM401	AK40-00013A	BY630407	TM BLOCK;VHA35ASE,NTSC,181CH,-,25dB,5V,	
VC10	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
VC11	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
VC13	2203-001607	BY130451	C-CER,CHIP;0.22nF,5%,50V,NP0,-,1608	
VC14	2203-001607	BY130451	C-CER,CHIP;0.22nF,5%,50V,NP0,-,1608	
VC15	2203-001607	BY130451	C-CER,CHIP;0.22nF,5%,50V,NP0,-,1608	
VC16	2203-001607	BY130451	C-CER,CHIP;0.22nF,5%,50V,NP0,-,1608	
VC17	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
VC18	2203-001607	BY130451	C-CER,CHIP;0.22nF,5%,50V,NP0,-,1608	
VC50	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
VC6	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
VC7	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
VC8	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
VC9	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
VDR1	2007-000040	BY230339	R-CHIP;150ohm,1%,1/10W,TP,1608	
VDR2	2007-000040	BY230339	R-CHIP;150ohm,1%,1/10W,TP,1608	
VDR3	2007-000040	BY230339	R-CHIP;150ohm,1%,1/10W,TP,1608	
VDR4	2007-000040	BY230339	R-CHIP;150ohm,1%,1/10W,TP,1608	
VDR5	2007-000040	BY230339	R-CHIP;150ohm,1%,1/10W,TP,1608	
VDR6	2007-000040	BY230339	R-CHIP;150ohm,1%,1/10W,TP,1608	
VE1	2401-002165	BY130280	C-AL;100uF,20%,16V,GP,TP,6.3x7,5	
VE2	2401-000913	BY130043	C-AL;22uF,20%,16V,GP,TP,5x11,5	
VE4	2401-001479	BY130015	C-AL;470UF,20%,10V,GP,TP,6.3*11MM,-	
VE5	2401-001479	BY130015	C-AL;470UF,20%,10V,GP,TP,6.3*11MM,-	
VE6	2401-001479	BY130015	C-AL;470UF,20%,10V,GP,TP,6.3*11MM,-	
VE7	2401-001479	BY130015	C-AL;470UF,20%,10V,GP,TP,6.3*11MM,-	
VIC1	1204-001978	BY631245	IC-VIDEO PROCESS;LA73054,-,36P,-,SSOP,7V	
VL6	2703-000398	BY330078	INDUCTOR-SMD;10uH,10%,3225	
VR30	2007-001167	BY230304	R-CHIP;75ohm,5%,1/10W,TP,1608	
VR31	2007-001167	BY230304	R-CHIP;75ohm,5%,1/10W,TP,1608	
VR32	2007-001167	BY230304	R-CHIP;75ohm,5%,1/10W,TP,1608	
VR33	2007-001167	BY230304	R-CHIP;75ohm,5%,1/10W,TP,1608	
VR34	2007-001167	BY230304	R-CHIP;75ohm,5%,1/10W,TP,1608	
VR51	2007-000070	BY230274	R-CHIP;0ohm,5%,1/10W,TP,1608	
VR52	2007-000070	BY230274	R-CHIP;0ohm,5%,1/10W,TP,1608	
VZ1	0403-001083	BY430111	DIODE-ZENER;UDZ9.1B,8.85-9.23V,200MW,UMD	
VZ10	0403-001083	BY430111	DIODE-ZENER;UDZ9.1B,8.85-9.23V,200MW,UMD	
VZ2	0403-001083	BY430111	DIODE-ZENER;UDZ9.1B,8.85-9.23V,200MW,UMD	
VZ3	0403-001083	BY430111	DIODE-ZENER;UDZ9.1B,8.85-9.23V,200MW,UMD	
VZ4	0403-001083	BY430111	DIODE-ZENER;UDZ9.1B,8.85-9.23V,200MW,UMD	
VZ5	0403-001083	BY430111	DIODE-ZENER;UDZ9.1B,8.85-9.23V,200MW,UMD	
VZ6	0403-001083	BY430111	DIODE-ZENER;UDZ9.1B,8.85-9.23V,200MW,UMD	
VZ7	0403-001083	BY430111	DIODE-ZENER;UDZ9.1B,8.85-9.23V,200MW,UMD	
VZ8	0403-001083	BY430111	DIODE-ZENER;UDZ9.1B,8.85-9.23V,200MW,UMD	
VZ9	0403-001083	BY430111	DIODE-ZENER;UDZ9.1B,8.85-9.23V,200MW,UMD	
W2095	2007-000078	BY230279	R-CHIP;1Kohm,5%,1/10W,TP,1608	
W2198	2007-000078	BY230279	R-CHIP;1Kohm,5%,1/10W,TP,1608	

Loc.No	Reference No	TSB Part No	Description ; Specification	Remark
P005	**AK94-00020A**	**BY630384**	**ASSY SORT-FUNCTION;DVD-VR300,004-SECREC4**	
AVIO	3722-002106	BY634840	JACK-PIN;3P+1P,SN/NI,BLK,ANGLE	
AVIO1A	AK63-00158A	BY731629	GROUND-AV JACK;DVD-VR300,PBS,T0.2,W156,L	
CN7	3722-002118	BY634839	JACK-IEEE1394;4P,NI,BLK,ANGLE,IEEE1394	
FJACK2	3708-000249	BY634821	CONNECTOR-FPC/FFC/PIC;27P,1.25MM,STRAIGH	
FJACKB	3809-001338	BY634818	CABLE-FLAT;30V,80C,120mm,27P,1.25mm,UL28	
SW710	3404-001182	BY632011	SWITCH-TACT;DC12V,50MA,100GF,6.0X6.0X5.0	
SW712	3404-001182	BY632011	SWITCH-TACT;DC12V,50MA,100GF,6.0X6.0X5.0	
SW713	3404-001182	BY632011	SWITCH-TACT;DC12V,50MA,100GF,6.0X6.0X5.0	
SW714	3404-001182	BY632011	SWITCH-TACT;DC12V,50MA,100GF,6.0X6.0X5.0	
SW715	3404-001182	BY632011	SWITCH-TACT;DC12V,50MA,100GF,6.0X6.0X5.0	
P007	**AK97-01041A**	**BY630386**	**ASSY SORT-KEY;D-VR3-S-TU,DVD RECORDER-VC**	
CN702	3710-001626	BY634423	CONNECTOR-SOCKET;8P,1R,2mm,ANGLE,SN	
SW709	3404-001182	BY632011	SWITCH-TACT;DC12V,50MA,100GF,6.0X6.0X5.0	
SW721	3404-001182	BY632011	SWITCH-TACT;DC12V,50MA,100GF,6.0X6.0X5.0	
SW722	3404-001182	BY632011	SWITCH-TACT;DC12V,50MA,100GF,6.0X6.0X5.0	
H001	**AK97-00570A**	**BY630399**	**ASSY-RECORDER DECK;-,DP-R1,ASSY RECORDER**	
CB1	2007-000070	BY230274	R-CHIP;0ohm,5%,1/10W,TP,1608	
CB2	2007-000070	BY230274	R-CHIP;0ohm,5%,1/10W,TP,1608	
CC10	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
CC11	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
CC12	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
CC13	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
CC14	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
CC15	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
CC16	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
CC17	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
CC18	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
CC19	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
CC2	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
CC20	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
CC21	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
CC22	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
CC23	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
CC24	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
CC25	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
CC26	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
CC27	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
CC28	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
CC29	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
CC3	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
CC30	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
CC31	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
CC32	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
CC33	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
CC34	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
CC35	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
CC37	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
CC38	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
CC4	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
CC41	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
CC45	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
CC46	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
CC47	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
CC48	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
CC49	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
CC5	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
CC51	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
CC53	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
CC55	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
CC57	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
CC6	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
CC61	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
CC63	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
CC64	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
CC65	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
CC66	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
CC68	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
CC7	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
CC70	2404-000284	BY130512	C-TA,CHIP;10uF,20%,16V,-,TP,3528	
CC71	2404-000284	BY130512	C-TA,CHIP;10uF,20%,16V,-,TP,3528	
CC72	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
CC73	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
CC74	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
CC75	2404-000284	BY130512	C-TA,CHIP;10uF,20%,16V,-,TP,3528	
CC76	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
CC77	2203-005918	BY130489	C-CER,CHIP;1000NF,10%,6.3V,X7R,TP,1608	
CC78	2203-005918	BY130489	C-CER,CHIP;1000NF,10%,6.3V,X7R,TP,1608	
CC79	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
CC8	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
CC80	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
CC81	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	

Loc.No	Reference No	TSB Part No	Description ; Specification	Remark
CC82	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
CC83	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
CC84	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
CC85	2203-000560	BY130523	C-CER,CHIP;220nF,+80-20%,25V,Y5V,TP,1608	
CC9	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
CIC1	AK13-00008A	BY631273	IC ASIC;-,-,256PIN,+3.3V,-40TO85C,LQFP	
CIC2	AK13-00012A	BY731641	PLD;EPM3064A,TQFP,44	
CIC3	1209-001550	BY631250	IC-PLL/SYNTHESIZER;TLC2933IPWR,SOP,14P,5	
CL3	2901-001281	BY330084	FILTER-EMI SMD;16V,2A,-,220000pF,2.00x1.	
CL4	2901-001281	BY330084	FILTER-EMI SMD;16V,2A,-,220000pF,2.00x1.	
CON1	3708-001915	BY634824	CONNECTOR-FPC/FFC/PIC;54P,0.5MM,SMD-A,SN	
CON2	3708-001916	BY634820	CONNECTOR-FPC/FFC/PIC;20P,0.5MM,SMD-A,SN	
CON3	3708-001878	BY634825	CONNECTOR-FPC/FFC/PIC;6P,1MM,SMD-A,SNPB,	
CON4	3708-001331	BY634822	CONNECTOR-FPC/FFC/PIC;40P,0.5MM,SMD-A,SN	
CR1	2007-000090	BY230285	R-CHIP;10Kohm,5%,1/10W,TP,1608	
CR10	2007-000078	BY230279	R-CHIP;1Kohm,5%,1/10W,TP,1608	
CR11	2007-000090	BY230285	R-CHIP;10Kohm,5%,1/10W,TP,1608	
CR15	2007-000079	BY230280	R-CHIP;1.8Kohm,5%,1/10W,TP,1608	
CR16	2007-000079	BY230280	R-CHIP;1.8Kohm,5%,1/10W,TP,1608	
CR17	2007-000124	BY230295	R-CHIP;2.2Kohm,5%,1/10W,TP,1608	
CR18	2007-000121	BY230351	R-CHIP;820ohm,5%,1/10W,TP,1608	
CR19	2007-000119	BY230332	R-CHIP;560ohm,5%,1/10W,TP,1608	
CR2	2007-000090	BY230285	R-CHIP;10Kohm,5%,1/10W,TP,1608	
CR20	2007-000124	BY230295	R-CHIP;2.2Kohm,5%,1/10W,TP,1608	
CR26	2007-000090	BY230285	R-CHIP;10Kohm,5%,1/10W,TP,1608	
CR28	2007-000116	BY230349	R-CHIP;120ohm,5%,1/10W,TP,1608	
CR29	2007-000070	BY230274	R-CHIP;0ohm,5%,1/10W,TP,1608	
CR3	2007-000078	BY230279	R-CHIP;1Kohm,5%,1/10W,TP,1608	
CR30	2007-001010	BY230360	R-CHIP;51Kohm,5%,1/10W,TP,1608	
CR31	2007-000078	BY230279	R-CHIP;1Kohm,5%,1/10W,TP,1608	
CR34	2007-000088	BY230345	R-CHIP;7.5Kohm,5%,1/10W,TP,1608	
CR35	2007-001157	BY230363	R-CHIP;750ohm,5%,1/10W,TP,1608	
CR36	2007-000079	BY230280	R-CHIP;1.8Kohm,5%,1/10W,TP,1608	
CR37	2007-000072	BY230275	R-CHIP;47ohm,5%,1/10W,TP,1608	
CR38	2007-000072	BY230275	R-CHIP;47ohm,5%,1/10W,TP,1608	
CR4	2007-000074	BY230276	R-CHIP;100ohm,5%,1/10W,TP,1608	
CR5	2007-000070	BY230274	R-CHIP;0ohm,5%,1/10W,TP,1608	
CR6	2007-000070	BY230274	R-CHIP;0ohm,5%,1/10W,TP,1608	
CR7	2007-000070	BY230274	R-CHIP;0ohm,5%,1/10W,TP,1608	
CR8	2007-000070	BY230274	R-CHIP;0ohm,5%,1/10W,TP,1608	
CR9	2007-000070	BY230274	R-CHIP;0ohm,5%,1/10W,TP,1608	
DC1	2203-000332	BY130461	C-CER,CHIP;0.012NF,5%,50V,C0G,TP,1608	
DC10	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
DC11	2203-000332	BY130461	C-CER,CHIP;0.012NF,5%,50V,C0G,TP,1608	
DC12	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
DC13	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
DC14	2203-000405	BY130463	C-CER,CHIP;0.18NF,5%,50V,C0G,TP,1608	
DC15	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
DC16	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
DC17	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
DC19	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
DC20	2203-000140	BY130459	C-CER,CHIP;1.5nF,10%,50V,X7R,TP,1608,-	
DC25	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
DC26	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
DC27	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
DC29	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
DC3	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
DC30	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
DC32	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
DC33	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
DC36	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
DC37	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
DC38	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
DC39	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
DC4	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
DC41	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
DC42	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
DC44	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
DC45	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
DC47	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
DC49	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
DC5	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
DC51	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
DC53	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
DC55	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
DC57	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
DC58	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
DC59	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
DC6	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
DC60	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
DC62	2404-000284	BY130512	C-TA,CHIP;10uF,20%,16V,-,TP,3528	
DC63	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
DC64	2203-000236	BY130439	C-CER,CHIP;0.1NF,5%,50V,C0G,TP,1608	
DC65	2203-000715	BY130516	C-CER,CHIP;3.3nF,10%,50V,X7R,TP,1608,-	
DC66	2203-000715	BY130516	C-CER,CHIP;3.3nF,10%,50V,X7R,TP,1608,-	
DC67	2203-000715	BY130516	C-CER,CHIP;3.3nF,10%,50V,X7R,TP,1608,-	
DC68	2203-000715	BY130516	C-CER,CHIP;3.3nF,10%,50V,X7R,TP,1608,-	
DC7	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
DC70	2203-000715	BY130516	C-CER,CHIP;3.3nF,10%,50V,X7R,TP,1608,-	
DC71	2404-000284	BY130512	C-TA,CHIP;10uF,20%,16V,-,TP,3528	
DC77	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
DC78	2404-000284	BY130512	C-TA,CHIP;10uF,20%,16V,-,TP,3528	
DC79	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
DC8	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
DC9	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
DIC1	AK13-00009A	BY631274	IC ASIC;-,-,256PIN,+3.3V,-40TO85C,LQFP	
DIC2	1201-000163	BY631232	IC-OP AMP;4560,SOP,8P,173MIL,DUAL,100V/m	
DIC3	0801-002694	BY631217	IC-CMOS LOGIC;74VHC4053,ANALOG MULTILPEX	
DR12	2007-000109	BY130423	R-CHIP;1Mohm,5%,1/10W,TP,1608	
DR13	2007-000072	BY230275	R-CHIP;47ohm,5%,1/10W,TP,1608	
DR14	2007-000078	BY230279	R-CHIP;1Kohm,5%,1/10W,TP,1608	
DR15	2007-000070	BY230274	R-CHIP;0ohm,5%,1/10W,TP,1608	
DR16	2007-000078	BY230279	R-CHIP;1Kohm,5%,1/10W,TP,1608	
DR17	2007-000070	BY230274	R-CHIP;0ohm,5%,1/10W,TP,1608	
DR22	2007-000539	BY230357	R-CHIP;200ohm,5%,1/10W,TP,1608	
DR25	2007-000082	BY230233	R-CHIP;3.3Kohm,5%,1/10W,TP,1608	
DR26	2007-000082	BY230233	R-CHIP;3.3Kohm,5%,1/10W,TP,1608	
DR27	2007-000082	BY230233	R-CHIP;3.3Kohm,5%,1/10W,TP,1608	
DR28	2007-000082	BY230233	R-CHIP;3.3Kohm,5%,1/10W,TP,1608	
DR29	2007-000134	BY230298	R-CHIP;33Kohm,5%,1/10W,TP,1608	
DR30	2007-000134	BY230298	R-CHIP;33Kohm,5%,1/10W,TP,1608	
DR31	2007-000082	BY230233	R-CHIP;3.3Kohm,5%,1/10W,TP,1608	
DR32	2007-000134	BY230298	R-CHIP;33Kohm,5%,1/10W,TP,1608	
DR33	2007-000134	BY230298	R-CHIP;33Kohm,5%,1/10W,TP,1608	
DR36	2007-000134	BY230298	R-CHIP;33Kohm,5%,1/10W,TP,1608	
DR37	2007-000082	BY230233	R-CHIP;3.3Kohm,5%,1/10W,TP,1608	
DR39	2007-000070	BY230274	R-CHIP;0ohm,5%,1/10W,TP,1608	
DR43	2007-000078	BY230279	R-CHIP;1Kohm,5%,1/10W,TP,1608	
DR44	2007-000070	BY230274	R-CHIP;0ohm,5%,1/10W,TP,1608	
DR45	2007-000070	BY230274	R-CHIP;0ohm,5%,1/10W,TP,1608	
MC10	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
MC11	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
MC12	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
MC14	2203-000815	BY130476	C-CER,CHIP;0.033NF,5%,50V,C0G,TP,1608	
MC15	2203-000815	BY130476	C-CER,CHIP;0.033NF,5%,50V,C0G,TP,1608	
MC2	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
MC20	2203-000440	BY130462	C-CER,CHIP;1nF,10%,50V,X7R,TP,1608,-	
MC21	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
MC22	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
MC23	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
MC3	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
MC4	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	

Loc.No	Reference No	TSB Part No	Description ; Specification	Remark
MC5	2203-000626	BY130444	C-CER,CHIP;0.022nF,5%,50V,C0G,TP,1608	
MC6	2203-000626	BY130444	C-CER,CHIP;0.022nF,5%,50V,C0G,TP,1608	
MC7	2203-000626	BY130444	C-CER,CHIP;0.022nF,5%,50V,C0G,TP,1608	
MC8	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
MC9	2404-000284	BY130512	C-TA,CHIP;10uF,20%,16V,-,TP,3528	
MIC1	AK09-00051A	BY631275	IC MICOM;-,-,-,-0.3 ~ +3.8V,30Mhz,-,-,2	
MIC3	1107-001369	BY631279	IC-FLASH MEMORY;29LV800,1Mx8/512Kx16,TSO	
MIC5	1203-003177	BY631241	IC-VOL. DETECTOR;BD5326G,SSOP,5P,2.9x1.6	
MLL1	2703-000398	BY330078	INDUCTOR-SMD;10uH,10%,3225	
MR11	2007-000402	BY230314	R-CHIP;150ohm,5%,1/10W,TP,1608	
MR13	2007-000090	BY230285	R-CHIP;10Kohm,5%,1/10W,TP,1608	
MR14	2007-000090	BY230285	R-CHIP;10Kohm,5%,1/10W,TP,1608	
MR15	2007-000090	BY230285	R-CHIP;10Kohm,5%,1/10W,TP,1608	
MR16	2007-000090	BY230285	R-CHIP;10Kohm,5%,1/10W,TP,1608	
MR22	2007-000084	BY230282	R-CHIP;4.7Kohm,5%,1/10W,TP,1608	
MR25	2007-000078	BY230279	R-CHIP;1Kohm,5%,1/10W,TP,1608	
MR28	2007-000070	BY230274	R-CHIP;0ohm,5%,1/10W,TP,1608	
MR29	2007-000070	BY230274	R-CHIP;0ohm,5%,1/10W,TP,1608	
MR31	2007-000090	BY230285	R-CHIP;10Kohm,5%,1/10W,TP,1608	
MR35	2007-000070	BY230274	R-CHIP;0ohm,5%,1/10W,TP,1608	
MR37	2007-000104	BY230346	R-CHIP;150Kohm,5%,1/10W,TP,1608	
MY1	2801-004074	BY633023	CRYSTAL-SMD;40MHz,50ppm,28-AAN,18pF,30oh	
PC1	2402-001042	BY130507	C-AL,SMD;100uF,20%,16V,GP,TP,6.6x6.6x5.	
PC11	2402-001042	BY130507	C-AL,SMD;100uF,20%,16V,GP,TP,6.6x6.6x5.	
PC12	2402-001042	BY130507	C-AL,SMD;100uF,20%,16V,GP,TP,6.6x6.6x5.	
PC14	2402-001042	BY130507	C-AL,SMD;100uF,20%,16V,GP,TP,6.6x6.6x5.	
PC17	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
PC2	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
PC24	2402-001042	BY130507	C-AL,SMD;100uF,20%,16V,GP,TP,6.6x6.6x5.	
PC3	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
PC4	2402-001042	BY130507	C-AL,SMD;100uF,20%,16V,GP,TP,6.6x6.6x5.	
PC5	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
PC6	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
PC7	2404-000256	BY130511	C-TA,CHIP;47UF,20%,16V,GP,TP,7343	
PC8	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
PCN	3711-005477	BY634829	CONNECTOR-HEADER;BOX,4P,1R,2mm,SMD-A,Sn+	
PIC1	1203-003175	BY631239	IC-MULTI REG.;BA33C25HFP,HRP,5P,9.39X8MM	
PIC2	1203-003176	BY631240	IC-MULTI REG.;BA33C18HFP,HRP,5P,9.39X8MM	
PL1	2901-001281	BY330084	FILTER-EMI SMD;16V,2A,-,220000pF,2.00x1.	
PL2	2901-001281	BY330084	FILTER-EMI SMD;16V,2A,-,220000pF,2.00x1.	
PL3	2901-001281	BY330084	FILTER-EMI SMD;16V,2A,-,220000pF,2.00x1.	
PL4	2901-001281	BY330084	FILTER-EMI SMD;16V,2A,-,220000pF,2.00x1.	
PL5	2901-001281	BY330084	FILTER-EMI SMD;16V,2A,-,220000pF,2.00x1.	
RC1	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
RC10	2404-000284	BY130512	C-TA,CHIP;10uF,20%,16V,-,TP,3528	
RC11	2203-000257	BY130440	C-CER,CHIP;10nF,10%,50V,X7R,TP,1608	
RC12	2203-000257	BY130440	C-CER,CHIP;10nF,10%,50V,X7R,TP,1608	
RC13	2203-000257	BY130440	C-CER,CHIP;10nF,10%,50V,X7R,TP,1608	
RC14	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
RC15	2404-000284	BY130512	C-TA,CHIP;10uF,20%,16V,-,TP,3528	
RC16	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
RC17	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
RC18	2404-000284	BY130512	C-TA,CHIP;10uF,20%,16V,-,TP,3528	
RC19	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
RC2	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
RC20	2203-000236	BY130439	C-CER,CHIP;0.1NF,5%,50V,C0G,TP,1608	
RC21	2203-000257	BY130440	C-CER,CHIP;10nF,10%,50V,X7R,TP,1608	
RC22	2203-000257	BY130440	C-CER,CHIP;10nF,10%,50V,X7R,TP,1608	
RC23	2203-000257	BY130440	C-CER,CHIP;10nF,10%,50V,X7R,TP,1608	
RC25	2203-000257	BY130440	C-CER,CHIP;10nF,10%,50V,X7R,TP,1608	
RC26	2203-000257	BY130440	C-CER,CHIP;10nF,10%,50V,X7R,TP,1608	
RC27	2203-000257	BY130440	C-CER,CHIP;10nF,10%,50V,X7R,TP,1608	
RC28	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
RC29	2203-000257	BY130440	C-CER,CHIP;10nF,10%,50V,X7R,TP,1608	
RC3	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
RC30	2203-000257	BY130440	C-CER,CHIP;10nF,10%,50V,X7R,TP,1608	

Loc.No	Reference No	TSB Part No	Description ; Specification	Remark
RC31	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
RC32	2203-000440	BY130462	C-CER,CHIP;1nF,10%,50V,X7R,TP,1608,-	
RC33	2203-000440	BY130462	C-CER,CHIP;1nF,10%,50V,X7R,TP,1608,-	
RC34	2203-000626	BY130444	C-CER,CHIP;0.022nF,5%,50V,C0G,TP,1608	
RC35	2203-000257	BY130440	C-CER,CHIP;10nF,10%,50V,X7R,TP,1608	
RC36	2203-000257	BY130440	C-CER,CHIP;10nF,10%,50V,X7R,TP,1608	
RC37	2203-000257	BY130440	C-CER,CHIP;10nF,10%,50V,X7R,TP,1608	
RC38	2203-000257	BY130440	C-CER,CHIP;10nF,10%,50V,X7R,TP,1608	
RC39	2203-000257	BY130440	C-CER,CHIP;10nF,10%,50V,X7R,TP,1608	
RC4	2203-000560	BY130523	C-CER,CHIP;220nF,+80-20%,25V,Y5V,TP,1608	
RC41	2203-000440	BY130462	C-CER,CHIP;1nF,10%,50V,X7R,TP,1608,-	
RC42	2203-000440	BY130462	C-CER,CHIP;1nF,10%,50V,X7R,TP,1608,-	
RC43	2203-000440	BY130462	C-CER,CHIP;1nF,10%,50V,X7R,TP,1608,-	
RC44	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
RC45	2203-000257	BY130440	C-CER,CHIP;10nF,10%,50V,X7R,TP,1608	
RC46	2203-000440	BY130462	C-CER,CHIP;1nF,10%,50V,X7R,TP,1608,-	
RC47	2203-000257	BY130440	C-CER,CHIP;10nF,10%,50V,X7R,TP,1608	
RC49	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
RC5	2203-000560	BY130523	C-CER,CHIP;220nF,+80-20%,25V,Y5V,TP,1608	
RC50	2203-005105	BY130488	C-CER,CHIP;0.68NF,5%,50V,C0G,TP,1608	
RC51	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
RC52	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
RC53	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
RC54	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
RC55	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
RC56	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
RC57	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
RC58	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
RC59	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
RC6	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
RC60	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
RC61	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
RC65	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
RC66	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
RC68	2203-001634	BY130460	C-CER,CHIP;33nF,10%,50V,X7R,TP,1608,1.6m	
RC69	2203-001634	BY130460	C-CER,CHIP;33nF,10%,50V,X7R,TP,1608,1.6m	
RC70	2404-000232	BY130510	C-TA,CHIP;4.7uF,20%,10V,-,TP,3216	
RC71	2404-000284	BY130512	C-TA,CHIP;10uF,20%,16V,-,TP,3528	
RC72	2404-000284	BY130512	C-TA,CHIP;10uF,20%,16V,-,TP,3528	
RC73	2404-000284	BY130512	C-TA,CHIP;10uF,20%,16V,-,TP,3528	
RC74	2404-000284	BY130512	C-TA,CHIP;10uF,20%,16V,-,TP,3528	
RC8	2404-000284	BY130512	C-TA,CHIP;10uF,20%,16V,-,TP,3528	
RC9	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
RIC1	AK13-00007A	BY631272	IC ASIC;-,-,128 PIN,7V,-0~ +70,TQFP,Tr	
RIC2	1201-002091	BY631233	IC-OP AMP;ELM854,SOP,TP,8P,-,DUAL,85dB,P	
RIC3	0801-002097	BY631214	IC-CMOS LOGIC;7ST08,AND GATE,SOP,5P,110M	
RIC4	1201-000163	BY631232	IC-OP AMP;4560,SOP,8P,173MIL,DUAL,100V/m	
RIC5	1201-000163	BY631232	IC-OP AMP;4560,SOP,8P,173MIL,DUAL,100V/m	
RR1	2007-000090	BY230285	R-CHIP;10Kohm,5%,1/10W,TP,1608	
RR10	2007-000090	BY230285	R-CHIP;10Kohm,5%,1/10W,TP,1608	
RR12	2007-000102	BY230292	R-CHIP;100Kohm,5%,1/10W,TP,1608	
RR13	2007-000102	BY230292	R-CHIP;100Kohm,5%,1/10W,TP,1608	
RR14	2007-000102	BY230292	R-CHIP;100Kohm,5%,1/10W,TP,1608	
RR15	2007-000431	BY230355	R-CHIP;16Kohm,5%,1/10W,TP,1608	
RR16	2007-000090	BY230285	R-CHIP;10Kohm,5%,1/10W,TP,1608	
RR19	2007-000102	BY230292	R-CHIP;100Kohm,5%,1/10W,TP,1608	
RR2	2007-000090	BY230285	R-CHIP;10Kohm,5%,1/10W,TP,1608	
RR20	2007-000102	BY230292	R-CHIP;100Kohm,5%,1/10W,TP,1608	
RR23	2007-001056	BY230273	R-CHIP;6.2Kohm,5%,1/10W,TP,1608	
RR24	2007-000097	BY230290	R-CHIP;47Kohm,5%,1/10W,TP,1608	
RR25	2007-000130	BY230352	R-CHIP;39Kohm,5%,1/10W,TP,1608	
RR26	2007-000102	BY230292	R-CHIP;100Kohm,5%,1/10W,TP,1608	
RR27	2007-000102	BY230292	R-CHIP;100Kohm,5%,1/10W,TP,1608	
RR28	2007-000090	BY230285	R-CHIP;10Kohm,5%,1/10W,TP,1608	
RR29	2007-000090	BY230285	R-CHIP;10Kohm,5%,1/10W,TP,1608	
RR3	2007-000090	BY230285	R-CHIP;10Kohm,5%,1/10W,TP,1608	

Loc.No	Reference No	TSB Part No	Description ; Specification	Remark
RR30	2007-000616	BY230300	R-CHIP;24Kohm,5%,1/10W,TP,1608	
RR31	2007-000079	BY230280	R-CHIP;1.8Kohm,5%,1/10W,TP,1608	
RR32	2007-000090	BY230285	R-CHIP;10Kohm,5%,1/10W,TP,1608	
RR33	2007-000102	BY230292	R-CHIP;100Kohm,5%,1/10W,TP,1608	
RR34	2007-000092	BY230287	R-CHIP;15Kohm,5%,1/10W,TP,1608	
RR35	2007-000092	BY230287	R-CHIP;15Kohm,5%,1/10W,TP,1608	
RR36	2007-000078	BY230279	R-CHIP;1Kohm,5%,1/10W,TP,1608	
RR37	2007-000070	BY230274	R-CHIP;0ohm,5%,1/10W,TP,1608	
RR38	2007-000109	BY130423	R-CHIP;1Mohm,5%,1/10W,TP,1608	
RR4	2007-000090	BY230285	R-CHIP;10Kohm,5%,1/10W,TP,1608	
RR40	2007-000098	BY230291	R-CHIP;56Kohm,5%,1/10W,TP,1608	
RR41	2007-000093	BY230308	R-CHIP;20Kohm,5%,1/10W,TP,1608	
RR42	2007-000093	BY230308	R-CHIP;20Kohm,5%,1/10W,TP,1608	
RR43	2007-000090	BY230285	R-CHIP;10Kohm,5%,1/10W,TP,1608	
RR5	2007-000067	BY230340	R-CHIP;15Kohm,1%,1/10W,TP,1608	
RR51	2007-000070	BY230274	R-CHIP;0ohm,5%,1/10W,TP,1608	
RR52	2007-000070	BY230274	R-CHIP;0ohm,5%,1/10W,TP,1608	
RR54	2007-000070	BY230274	R-CHIP;0ohm,5%,1/10W,TP,1608	
RR7	2007-000084	BY230282	R-CHIP;4.7Kohm,5%,1/10W,TP,1608	
RR8	2007-000090	BY230285	R-CHIP;10Kohm,5%,1/10W,TP,1608	
RR9	2007-000090	BY230285	R-CHIP;10Kohm,5%,1/10W,TP,1608	
VC10	2203-000843	BY130518	C-CER,CHIP;39nF,10%,25V,X7R,TP,1608,-	
VC11	2203-000843	BY130518	C-CER,CHIP;39nF,10%,25V,X7R,TP,1608,-	
VC12	2203-000843	BY130518	C-CER,CHIP;39nF,10%,25V,X7R,TP,1608,-	
VC13	2203-000843	BY130518	C-CER,CHIP;39nF,10%,25V,X7R,TP,1608,-	
VC14	2203-000843	BY130518	C-CER,CHIP;39nF,10%,25V,X7R,TP,1608,-	
VC15	2203-000491	BY130443	C-CER,CHIP;2.2nF,10%,50V,X7R,TP,1608,-	
VC16	2203-000491	BY130443	C-CER,CHIP;2.2nF,10%,50V,X7R,TP,1608,-	
VC17	2203-000491	BY130443	C-CER,CHIP;2.2nF,10%,50V,X7R,TP,1608,-	
VC2	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
VC3	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
VC4	2404-000284	BY130512	C-TA,CHIP;10uF,20%,16V,-,TP,3528	
VC5	2404-001269	BY130513	C-TA,CHIP;10uF,20%,20V,-,TP,3528	
VC6	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
VC7	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
VC8	2203-000257	BY130440	C-CER,CHIP;10nF,10%,50V,X7R,TP,1608	
VC9	2203-000843	BY130518	C-CER,CHIP;39nF,10%,25V,X7R,TP,1608,-	
VIC1	1003-001676	BY631251	IC-MOTOR DRIVER;BD7905BFS,SSOP-A54,54P,1	
VIC2	1003-001677	BY631224	IC-MOTOR DRIVER;BA5962FVM,MSOP-8,8P,4.0x	
VR1	2007-000090	BY230285	R-CHIP;10Kohm,5%,1/10W,TP,1608	
VR10	2007-000034	BY230338	R-CHIP;1OHM,5%,1/4W,DA,TP,3216	
VR11	2007-000034	BY230338	R-CHIP;1OHM,5%,1/4W,DA,TP,3216	
VR12	2007-000034	BY230338	R-CHIP;1OHM,5%,1/4W,DA,TP,3216	
VR13	2007-000034	BY230338	R-CHIP;1OHM,5%,1/4W,DA,TP,3216	
VR14	2007-000090	BY230285	R-CHIP;10Kohm,5%,1/10W,TP,1608	
VR15	2007-000070	BY230274	R-CHIP;0ohm,5%,1/10W,TP,1608	
VR16	2007-000070	BY230274	R-CHIP;0ohm,5%,1/10W,TP,1608	
VR17	2007-000075	BY230277	R-CHIP;220ohm,5%,1/10W,TP,1608	
VR18	2007-000075	BY230277	R-CHIP;220ohm,5%,1/10W,TP,1608	
VR19	2007-000965	BY230303	R-CHIP;5.1Kohm,5%,1/10W,TP,1608	
VR2	2007-000090	BY230285	R-CHIP;10Kohm,5%,1/10W,TP,1608	
VR24	2007-000502	70796026	R-CHIP;2.2ohm,5%,1/8W,TP,2012	
VR25	2007-000716	BY230359	R-CHIP;3.9ohm,5%,1/8W,TP,2012	
VR26	2007-000502	70796026	R-CHIP;2.2ohm,5%,1/8W,TP,2012	
VR27	2007-000716	BY230359	R-CHIP;3.9ohm,5%,1/8W,TP,2012	
VR3	2007-000090	BY230285	R-CHIP;10Kohm,5%,1/10W,TP,1608	
VR4	2007-000090	BY230285	R-CHIP;10Kohm,5%,1/10W,TP,1608	
VR40	2007-000090	BY230285	R-CHIP;10Kohm,5%,1/10W,TP,1608	
VR41	2007-000090	BY230285	R-CHIP;10Kohm,5%,1/10W,TP,1608	
VR42	2007-000093	BY230308	R-CHIP;20Kohm,5%,1/10W,TP,1608	
VR43	2007-000093	BY230308	R-CHIP;20Kohm,5%,1/10W,TP,1608	
VR5	2007-000090	BY230285	R-CHIP;10Kohm,5%,1/10W,TP,1608	
VR6	2007-000124	BY230295	R-CHIP;2.2Kohm,5%,1/10W,TP,1608	
VR7	2007-000124	BY230295	R-CHIP;2.2Kohm,5%,1/10W,TP,1608	
VR8	2007-000090	BY230285	R-CHIP;10Kohm,5%,1/10W,TP,1608	
VR9	2007-000131	BY230353	R-CHIP;91Kohm,5%,1/10W,TP,1608	
Y1	2801-004180	BY633024	CRYSTAL-SMD;33.8688MHZ,50PPM,28-AAN,12PF	
ZAR1	2011-000475	BY230366	R-NET;33OHM,5%,1/16W,L,CHIP,8P,TP,32	
ZAR2	2011-000475	BY230366	R-NET;33OHM,5%,1/16W,L,CHIP,8P,TP,32	
ZAR3	2011-000475	BY230366	R-NET;33OHM,5%,1/16W,L,CHIP,8P,TP,32	
ZAR4	2011-000475	BY230366	R-NET;33OHM,5%,1/16W,L,CHIP,8P,TP,32	
ZAR5	2011-001085	BY230369	R-NET;82OHM,5%,1/16W,L,CHIP,8P,TP	
ZB1	2007-000070	BY230274	R-CHIP;0ohm,5%,1/10W,TP,1608	
ZC1	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
ZC10	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
ZC12	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
ZC14	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
ZC15	2203-001634	BY130460	C-CER,CHIP;33nF,10%,50V,X7R,TP,1608,1.6m	
ZC16	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
ZC17	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
ZC18	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
ZC19	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
ZC2	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
ZC20	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
ZC21	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
ZC22	2203-000715	BY130516	C-CER,CHIP;3.3nF,10%,50V,X7R,TP,1608,-	
ZC25	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
ZC26	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
ZC27	2203-000560	BY130523	C-CER,CHIP;220nF,+80-20%,25V,Y5V,TP,1608	
ZC28	2203-000560	BY130523	C-CER,CHIP;220nF,+80-20%,25V,Y5V,TP,1608	
ZC3	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
ZC30	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
ZC31	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
ZC32	2203-000783	BY130435	C-CER,CHIP;0.33NF,5%,50V,C0G,TP,1608	
ZC33	2203-000140	BY130459	C-CER,CHIP;1.5nF,10%,50V,X7R,TP,1608,-	
ZC34	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
ZC35	2203-000257	BY130440	C-CER,CHIP;10nF,10%,50V,X7R,TP,1608	
ZC36	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
ZC37	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
ZC38	2203-001662	BY130482	C-CER,CHIP;5.6NF,10%,50V,X7R,TP,1608	
ZC39	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
ZC4	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
ZC40	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
ZC41	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
ZC42	2203-000715	BY130516	C-CER,CHIP;3.3nF,10%,50V,X7R,TP,1608,-	
ZC43	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
ZC44	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
ZC45	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
ZC46	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
ZC47	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
ZC48	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
ZC49	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
ZC5	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
ZC50	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
ZC51	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
ZC52	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
ZC53	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
ZC54	2203-000560	BY130523	C-CER,CHIP;220nF,+80-20%,25V,Y5V,TP,1608	
ZC55	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
ZC56	2404-000284	BY130512	C-TA,CHIP;10uF,20%,16V,-,TP,3528	
ZC57	2404-000284	BY130512	C-TA,CHIP;10uF,20%,16V,-,TP,3528	
ZC6	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
ZC60	2203-006035	BY130490	C-CER,CHIP;220NF,+-10%,10V,X7R,TP,1608	
ZC61	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
ZC7	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
ZC8	2203-005148	BY130480	C-CER,CHIP;100nF,10%,16V,X7R,TP,1608	
ZIC1	0904-001840	BY631220	IC-I/O CONTROLLER;LC98600CT,16Bit,LQFP,2	
ZIC2	1105-001305	BY631227	IC-DRAM;4S641632,1MX16X4BIT,TSOP,54P,4	
ZL2	2901-001281	BY330084	FILTER-EMI SMD;16V,2A,-,220000pF,2.00x1.	
ZL4	2901-001281	BY330084	FILTER-EMI SMD;16V,2A,-,220000pF,2.00x1.	
ZR1	2007-000113	BY230328	R-CHIP;33ohm,5%,1/10W,TP,1608	
ZR11	2007-000084	BY230282	R-CHIP;4.7Kohm,5%,1/10W,TP,1608	

Loc.No	Reference No	TSB Part No	Description ; Specification	Remark
ZR14	2007-000090	BY230285	R-CHIP;10Kohm,5%,1/10W,TP,1608	
ZR15	2007-000402	BY230314	R-CHIP;150ohm,5%,1/10W,TP,1608	
ZR18	2007-000081	BY230281	R-CHIP;2.7Kohm,5%,1/10W,TP,1608	
ZR19	2007-000113	BY230328	R-CHIP;33ohm,5%,1/10W,TP,1608	
ZR2	2007-000113	BY230328	R-CHIP;33ohm,5%,1/10W,TP,1608	
ZR21	2007-000078	BY230279	R-CHIP;1Kohm,5%,1/10W,TP,1608	
ZR22	2007-000086	BY230283	R-CHIP;5.6Kohm,5%,1/10W,TP,1608	
ZR23	2007-001179	BY230305	R-CHIP;8.2Kohm,5%,1/10W,TP,1608	
ZR24	2007-001179	BY230305	R-CHIP;8.2Kohm,5%,1/10W,TP,1608	
ZR25	2007-000075	BY230277	R-CHIP;220ohm,5%,1/10W,TP,1608	
ZR27	2007-000107	BY230312	R-CHIP;470Kohm,5%,1/10W,TP,1608	
ZR28	2007-000132	BY230354	R-CHIP;180Kohm,5%,1/10W,TP,1608	
ZR3	2007-000113	BY230328	R-CHIP;33ohm,5%,1/10W,TP,1608	
ZR30	2007-000134	BY230298	R-CHIP;33Kohm,5%,1/10W,TP,1608	
ZR31	2007-000090	BY230285	R-CHIP;10Kohm,5%,1/10W,TP,1608	
ZR32	2007-000090	BY230285	R-CHIP;10Kohm,5%,1/10W,TP,1608	
ZR33	2007-000402	BY230314	R-CHIP;150ohm,5%,1/10W,TP,1608	
ZR34	2007-000090	BY230285	R-CHIP;10Kohm,5%,1/10W,TP,1608	
ZR35	2007-000102	BY230292	R-CHIP;100Kohm,5%,1/10W,TP,1608	
ZR36	2007-000090	BY230285	R-CHIP;10Kohm,5%,1/10W,TP,1608	
ZR37	2007-000090	BY230285	R-CHIP;10Kohm,5%,1/10W,TP,1608	
ZR38	2007-000090	BY230285	R-CHIP;10Kohm,5%,1/10W,TP,1608	
ZR39	2007-000084	BY230282	R-CHIP;4.7Kohm,5%,1/10W,TP,1608	
ZR4	2007-000113	BY230328	R-CHIP;33ohm,5%,1/10W,TP,1608	
ZR40	2007-000090	BY230285	R-CHIP;10Kohm,5%,1/10W,TP,1608	
ZR41	2007-000084	BY230282	R-CHIP;4.7Kohm,5%,1/10W,TP,1608	
ZR5	2007-000113	BY230328	R-CHIP;33ohm,5%,1/10W,TP,1608	
ZR58	2007-000071	BY230341	R-CHIP;22ohm,5%,1/10W,TP,1608	
ZR59	2007-000115	BY230348	R-CHIP;82ohm,5%,1/10W,TP,1608	
ZR6	2007-000113	BY230328	R-CHIP;33ohm,5%,1/10W,TP,1608	
ZR60	2007-000115	BY230348	R-CHIP;82ohm,5%,1/10W,TP,1608	
ZR61	2007-000071	BY230341	R-CHIP;22ohm,5%,1/10W,TP,1608	
ZR62	2007-000115	BY230348	R-CHIP;82ohm,5%,1/10W,TP,1608	
ZR63	2007-000071	BY230341	R-CHIP;22ohm,5%,1/10W,TP,1608	
ZR64	2007-000071	BY230341	R-CHIP;22ohm,5%,1/10W,TP,1608	
ZR65	2007-000115	BY230348	R-CHIP;82ohm,5%,1/10W,TP,1608	
ZR66	2007-000115	BY230348	R-CHIP;82ohm,5%,1/10W,TP,1608	
ZR67	2007-000078	BY230279	R-CHIP;1Kohm,5%,1/10W,TP,1608	
ZR7	2007-000113	BY230328	R-CHIP;33ohm,5%,1/10W,TP,1608	
ZR8	2007-000113	BY230328	R-CHIP;33ohm,5%,1/10W,TP,1608	
ZR9	2007-000090	BY230285	R-CHIP;10Kohm,5%,1/10W,TP,1608	

Loc.No	Reference No	TSB Part No	Description ; Specification	Remark

TOSHIBA CORPORATION

1 1, SHIBAURA 1 CHOME, MINATO KU, TOKYO 105 8001, JAPAN

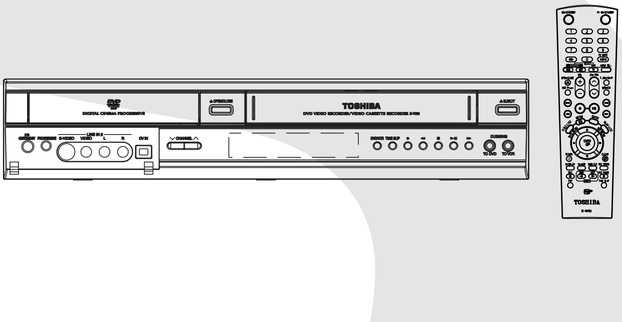
TOSHIBA

FILE NO. 810-200434CD

CIRCUIT DIAGRAMS

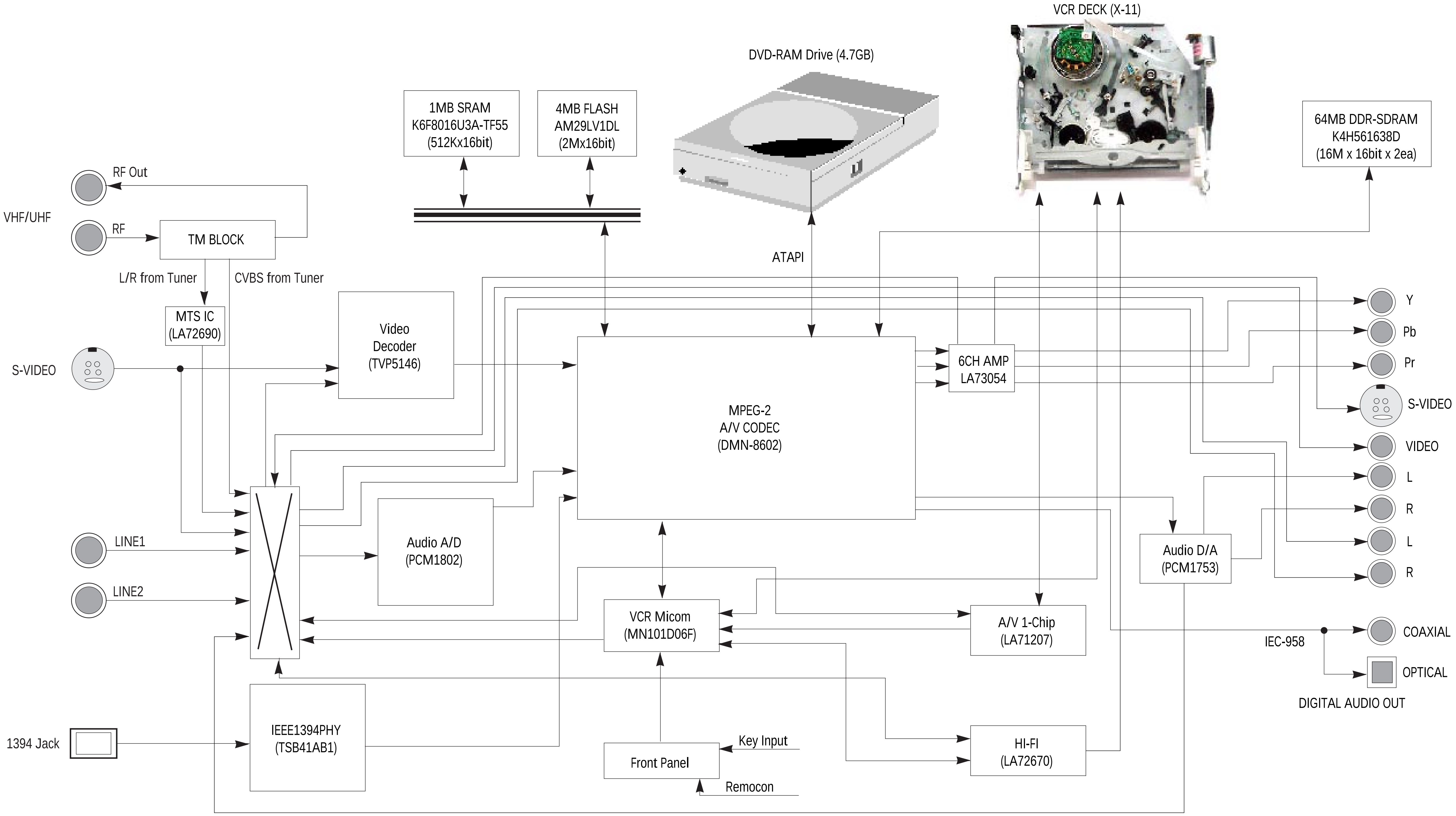
DVD VIDEO RECORDER/ VIDEO CASSETTE RECORDER

D-VR3SU
D-VR3SC
D-VKR3SU

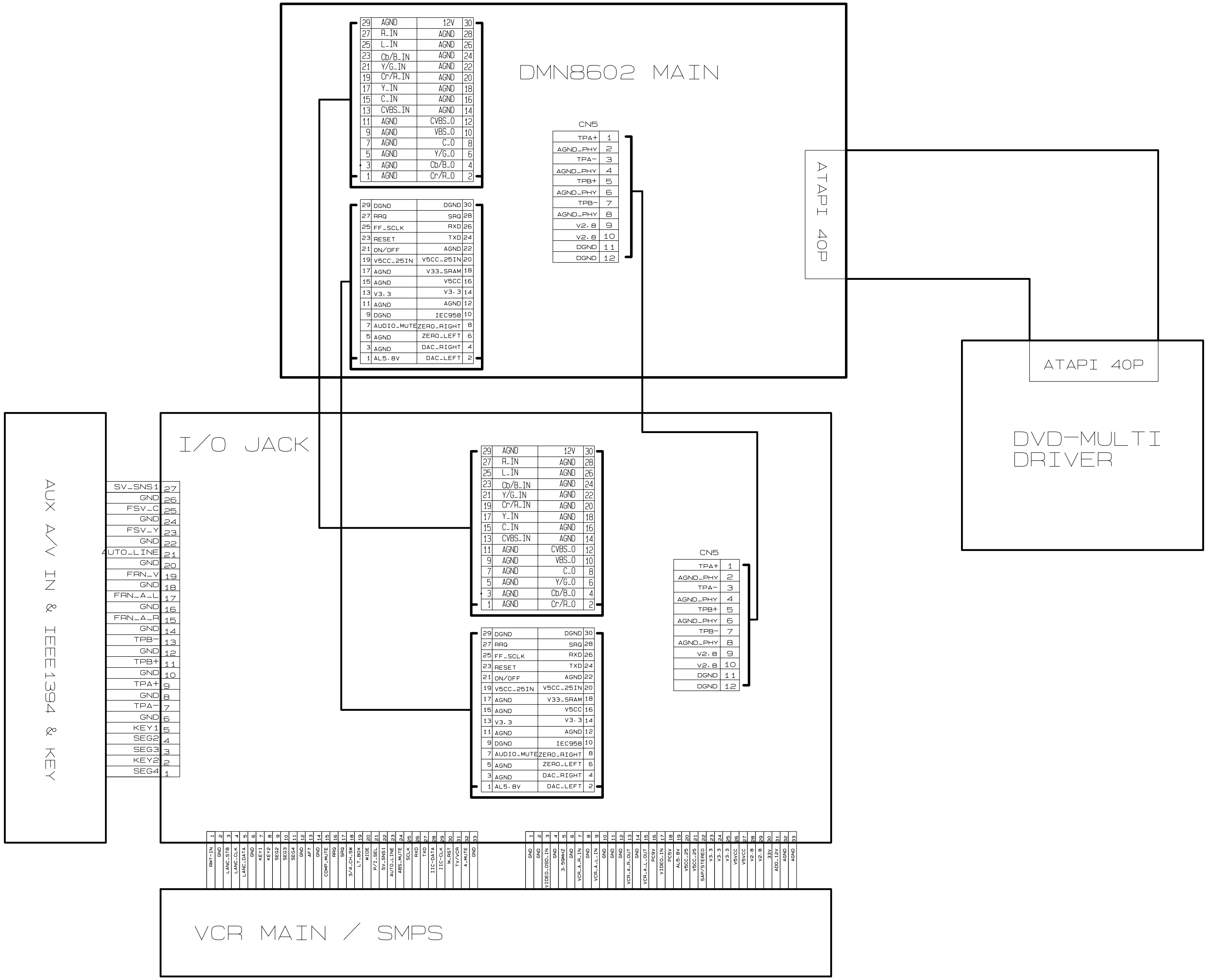


DOCUMENT CREATED IN JAPAN, Oct., 2004

12. Block Diagram


VCR DECK (X-11)
DVD-RAM Drive (4.7GB)
1MB SRAM
K6F8016U3A-TF55
(512Kx16bit)
4MB FLASH
AM29LV1DL
(2Mx16bit)
64MB DDR-SDRAM
K4H561638D
(16M x 16bit x 2ea)
RF Out
VHF/UHF
RF
TM BLOCK
ATAPI
L/R from Tuner
CVBS from Tuner
MTS IC
(LA72690)
Video
Decoder
(TVP5146)
S-VIDEO
MPEG-2
A/V CODEC
(DMN-8602)
6CH AMP
LA73054
Y
Pb
Pr
S-VIDEO
VIDEO
L
R
L
R
LINE1
LINE2
Audio A/D
(PCM1802)
Audio D/A
(PCM1753)
VCR Micom
(MN101D06F)
A/V 1-Chip
(LA71207)
IEC-958
COAXIAL
OPTICAL
DIGITAL AUDIO OUT
1394 Jack
IEEE1394PHY
(TSB41AB1)
Key Input
Front Panel
Remocon
HI-FI
(LA72670)

13. Wiring Diagram


DMN8602 MAIN
29 AGND 12V 30
27 R_IN AGND 28
25 L_IN AGND 26
23 Cb/B_IN AGND 24
21 Y/G_IN AGND 22
19 Cr/R_IN AGND 20
17 Y_IN AGND 18
15 C_IN AGND 16
13 CVBS_IN AGND 14
11 AGND CVBS_O 12
9 AGND VBS_O 10
7 AGND C_O 8
5 AGND Y/G_O 6
3 AGND Cb/B_O 4
1 AGND Cr/R_O 2
29 DGND DGND 30
27 RRQ SRQ 28
25 FF_SCLK RXD 26
23 RESET TXD 24
21 ON/OFF AGND 22
19 V5CC_25IN V5CC_25IN 20
17 AGND V33_SRAM 18
15 AGND V5CC 16
13 V3.3 V3.3 14
11 AGND AGND 12
9 DGND IEC958 10
7 AUDIO_MUTE ZERO_RIGHT 8
5 AGND ZERO_LEFT 6
3 AGND DAC_RIGHT 4
1 AL5.8V DAC_LEFT 2
CN5
TPA+ 1
AGND_PHY 2
TPA- 3
AGND_PHY 4
TPB+ 5
AGND_PHY 6
TPB- 7
AGND_PHY 8
V2.8 9
V2.8 10
DGND 11
DGND 12
ATAPI 40P
ATAPI 40P
DVD-MULTI DRIVER
AUX A/V IN & IEEE1394 & KEY
SV_SNS1 27
GND 26
FSV_C 25
GND 24
FSV_Y 23
GND 22
AUTO_LINE 21
GND 20
FRN_V 19
GND 18
FRN_A_L 17
GND 16
FRN_A_R 15
GND 14
TPB- 13
GND 12
TPB+ 11
GND 10
TPA+ 9
GND 8
TPA- 7
GND 6
KEY1 5
SEG2 4
SEG3 3
KEY2 2
SEG4 1
I/O JACK
29 AGND 12V 30
27 R_IN AGND 28
25 L_IN AGND 26
23 Cb/B_IN AGND 24
21 Y/G_IN AGND 22
19 Cr/R_IN AGND 20
17 Y_IN AGND 18
15 C_IN AGND 16
13 CVBS_IN AGND 14
11 AGND CVBS_O 12
9 AGND VBS_O 10
7 AGND C_O 8
5 AGND Y/G_O 6
3 AGND Cb/B_O 4
1 AGND Cr/R_O 2
29 DGND DGND 30
27 RRQ SRQ 28
25 FF_SCLK RXD 26
23 RESET TXD 24
21 ON/OFF AGND 22
19 V5CC_25IN V5CC_25IN 20
17 AGND V33_SRAM 18
15 AGND V5CC 16
13 V3.3 V3.3 14
11 AGND AGND 12
9 DGND IEC958 10
7 AUDIO_MUTE ZERO_RIGHT 8
5 AGND ZERO_LEFT 6
3 AGND DAC_RIGHT 4
1 AL5.8V DAC_LEFT 2
CN5
TPA+ 1
AGND_PHY 2
TPA- 3
AGND_PHY 4
TPB+ 5
AGND_PHY 6
TPB- 7
AGND_PHY 8
V2.8 9
V2.8 10
DGND 11
DGND 12
1 RMT-IN
2 GND
3 LANC_STB
4 LANC_CLK
5 LANC_DATA
6 GND
7 KEY1
8 KEY2
9 SEG2
10 SEG3
11 SEG4
12 GND
13 AFT
14 GND
15 COMP_MUTE
16 RRQ
17 SRQ
18 3/4_CH_SW
19 LT_BOX
20 WIDE
21 P/I_SEL
22 SV_SNS1
23 AUTO_LINE
24 ABS_MUTE
25 SCLK
26 RXD
27 TXD
28 IIC-DATA
29 IIC-CLK
30 M_RST
31 TV/VCR
32 A_MUTE
33 GND
1 GND
2 GND
3 VIDEO_OSD_IN
4 GND
5 3.59MHZ
6 GND
7 VCR_A_R_IN
8 GND
9 VCR_A_L_IN
10 GND
11 GND
12 GND
13 VCR_A_R_OUT
14 GND
15 VCR_A_L_OUT
16 PC9V
17 VIDEO_IN
18 PC5V
19 AL5.8V
20 V5CC_25
21 V5CC_25
22 SAP/STEREO
23 V3.3
24 V3.3
25 V3.3
26 V5VCC
27 V5VCC
28 V2.8
29 V2.8
30 33V
31 ADD_12V
32 AGND
33 AGND
VCR MAIN / SMPS

14. PCB Diagrams

14-1 VCR Main PCB - 14-2

14-2 DVD Main PCB - 14-4

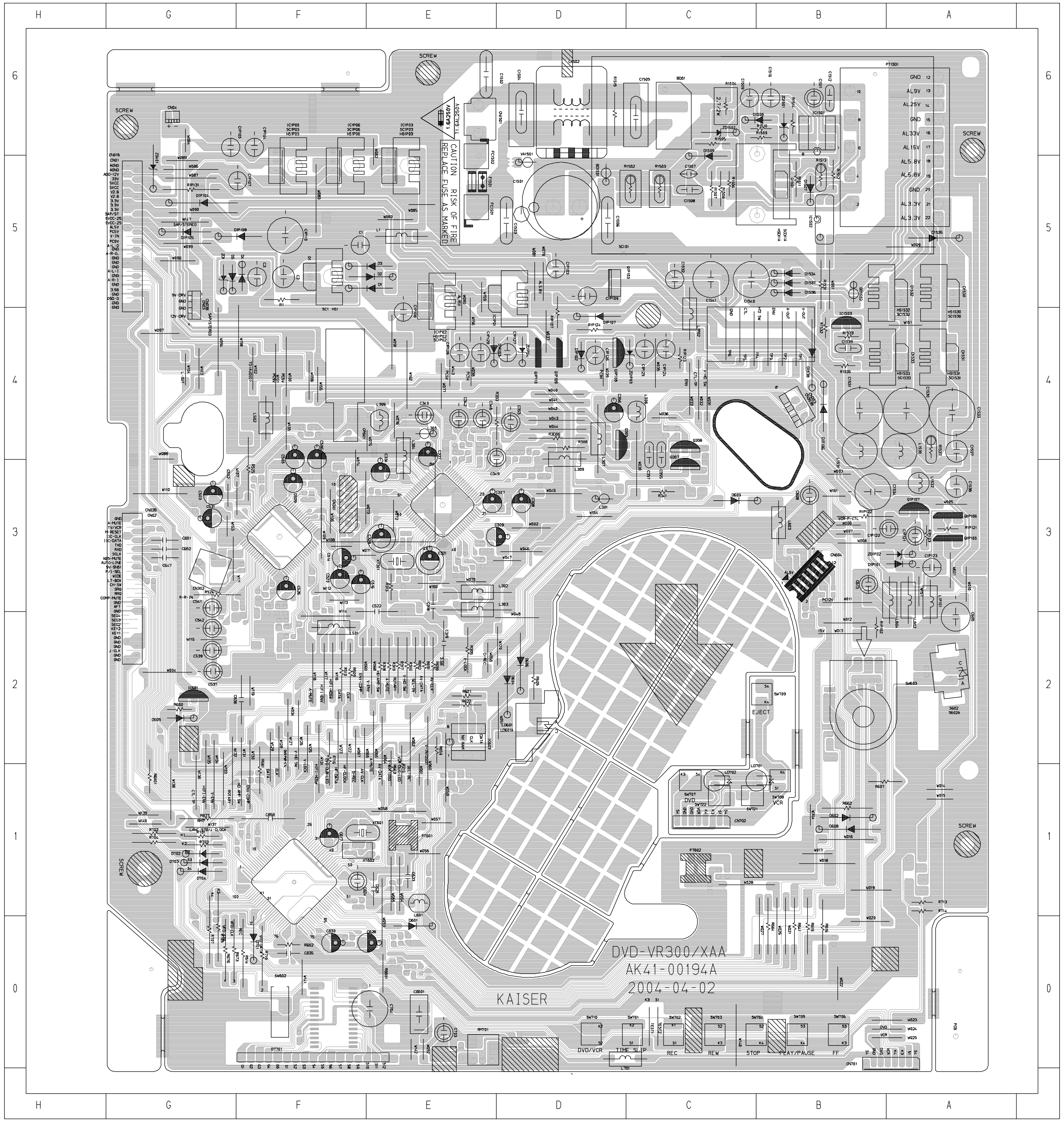
14-3 Jack PCB - 14-6

14-4 Front PCB - 14-8

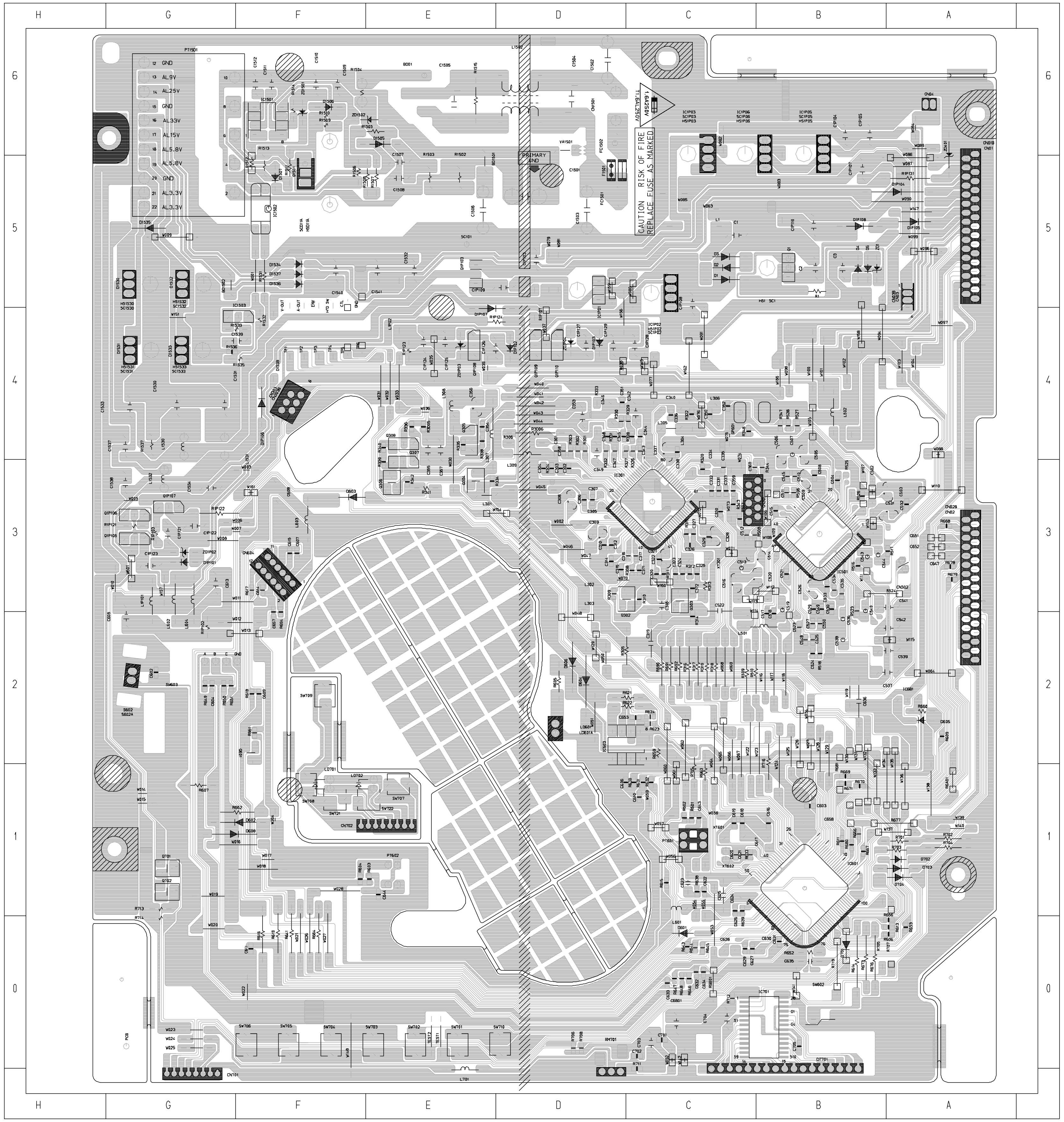
14-5 Key PCB - 14-8

14-1 VCR Main PCB

COMPONENT SIDE

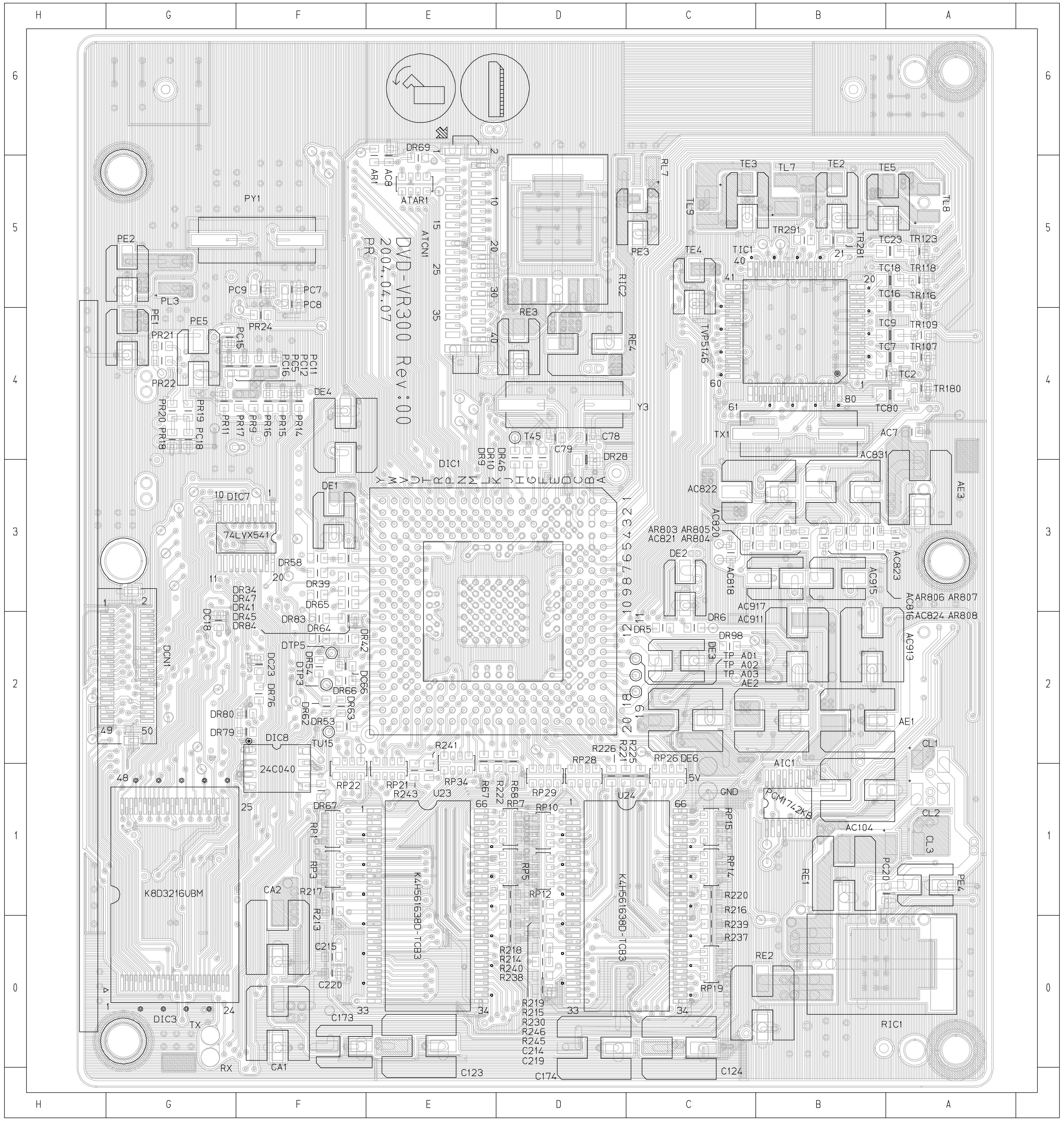

H
G
F
E
D
C
B
A
6
5
4
3
2
1
0
SCREW
CAUTION RISK OF FIRE
REPLACE FUSE AS MARKED
EJECT
DVD/VCR
TIME SLIP
REC
REW
STOP
PLAY/PAUSE
FF
DVD-VR300/XAA
AK41-00194A
2004-04-02
KAISER

CONDUCTOR SIDE

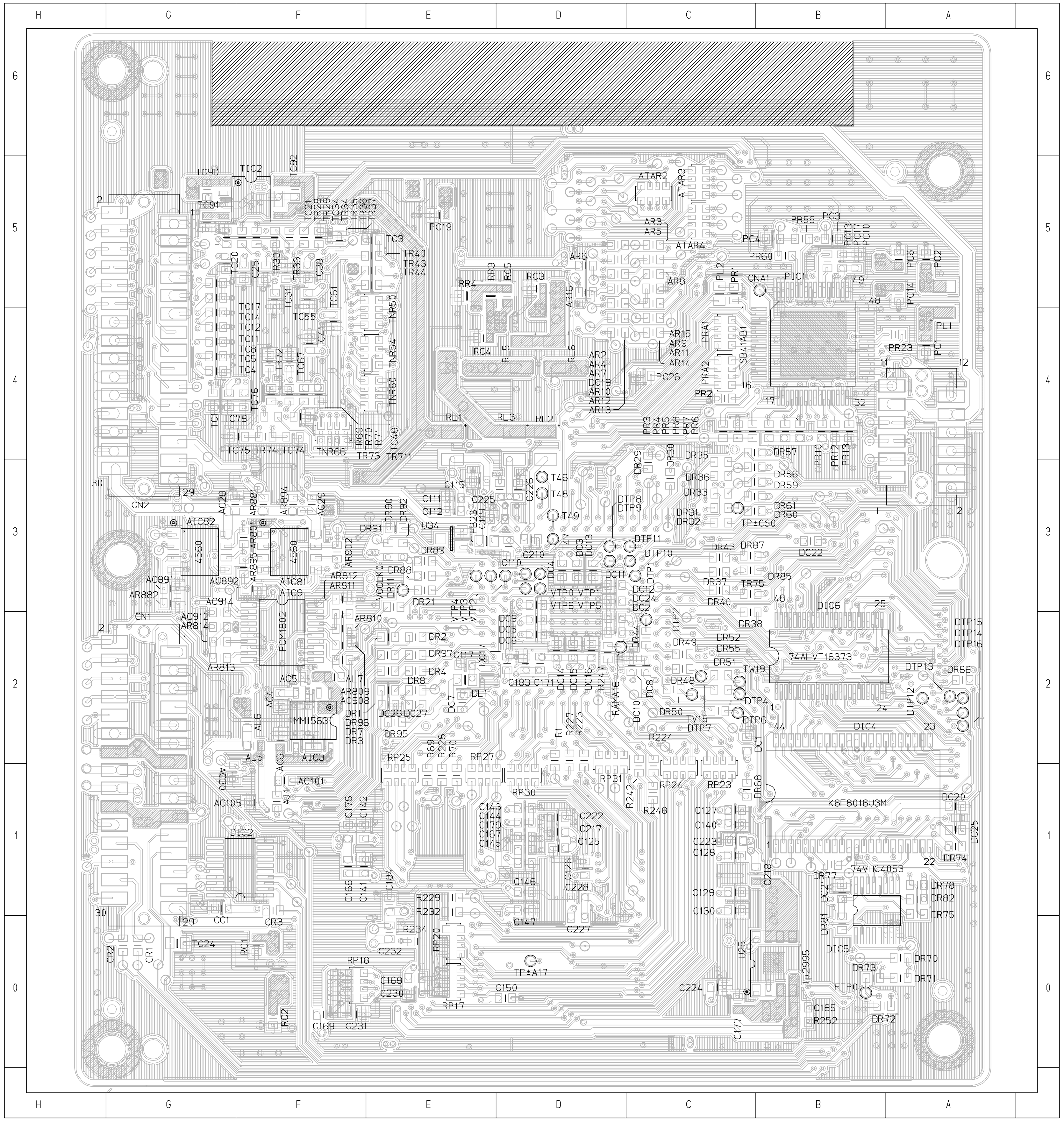

H
G
F
E
D
C
B
A
6
5
4
3
2
1
0
GND
AL.9V
AL.25V
GND
AL.33V
AL.15V
AL.5.8V
AL.5.8V
GND
AL.3.3V
AL.3.3V
PRIMARY GND
CAUTION RISK OF FIRE
REPLACE FUSE AS MARKED

14-2 DVD Main PCB

COMPONENT SIDE

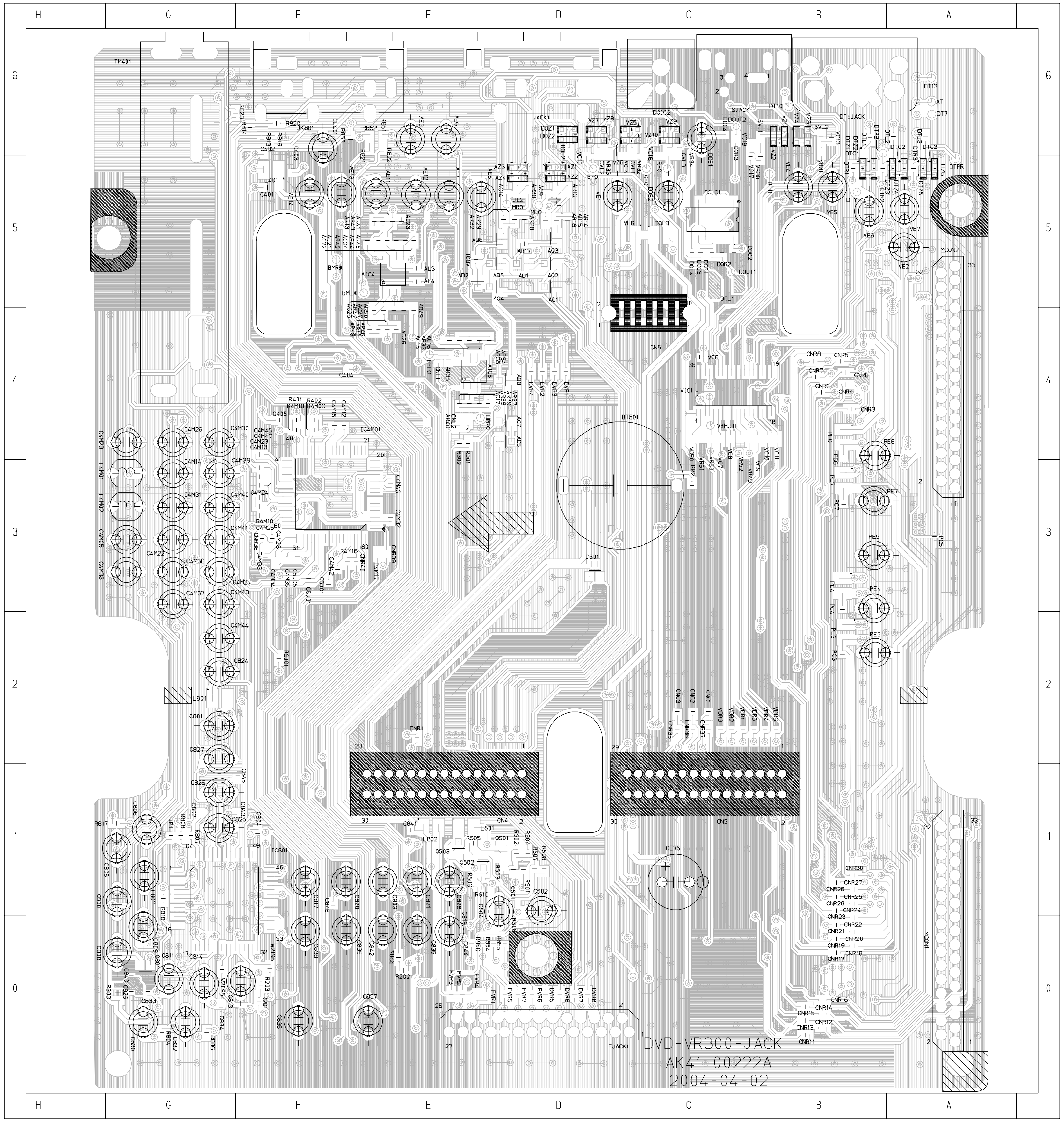

H G F E D C B A
6 5 4 3 2 1 0
DVD-VR300 Rev:00
2004.04.07
PR
DR69
AR1
AC6
ATAR1
ATCN1
PY1
PE2
PL3
PE1
PE5
PC9
PC7
PC8
PR24
PR21
PR22
PC15
PC11
PC12
PC5
PC16
PR20 PR18
PR19 PC18
PR11
PR17
PR9
PR16
PR15
PR14
DE4
DE1
DIC7
74LVX541
DR58
DR39
DR65
DR34
DR47
DR41
DR45
DR84
DR83
DR64
DR42
DC18
DCN1
DTP5
DC23 DR76
DR54
DTP3
DR66
DC66
DR62
DR63
DR53
DR80
DR79
DIC8
24C040
TU15
K8D3216UBM
DIC3
TX
RX
CA1
CA2
R217
R213
C215
C220
C173
RP22
DR67
RP1
RP3
RP21
R243
U23
RP34
R241
R67
R222
R68
RP7
RP29
RP10
K4H561638D-TCB3
RP5
RP12
R218
R214
R240
R238
R219
R215
R230
R246
R245
C214
C219
C123
C174
C124
U24
R226
R221
R225
RP28
RP26
DE6
5V
GND
RP15
RP14
R220
R216
R239
R237
RP19
RE2
RIC1
RE1
PC20
PE4
CL1
CL2
CL3
AIC1
PCM1742KE
AC104
AE1
AE2
TP A01
TP A02
TP A03
DE3
DR98
DR5
DR6
DE2
AC917
AC911
AC913
AC818
AC820
AR803 AR805
AC821 AR804
AC822
AC915
AC816
AC823
AR806 AR807
AC824 AR808
AC831
AE3
AC7
TX1
TC80
TR180
TC2
TC7
TR107
TC9
TR109
TC16
TR116
TC18
TR118
TC23
TR123
TR281
TR291
TIC1
TE3
TL7
TE2
TE5
TL8
TL9
TE4
TVP5146
RL7
PE3
RIC2
RE3
RE4
Y3
T45
C78
C79
DR28
DR46
DR10
DR9
DIC1
1 2 3 4 5 6 7 8 9 10 11 12
18 19 20
Y W V U T R P N M L K J H G F E D C B A
2 10 15 20 25 30 35 40
1 2 49 50 48 25 24 66 33 34 1 20 21 40 41 60 61 80

CONDUCTOR SIDE

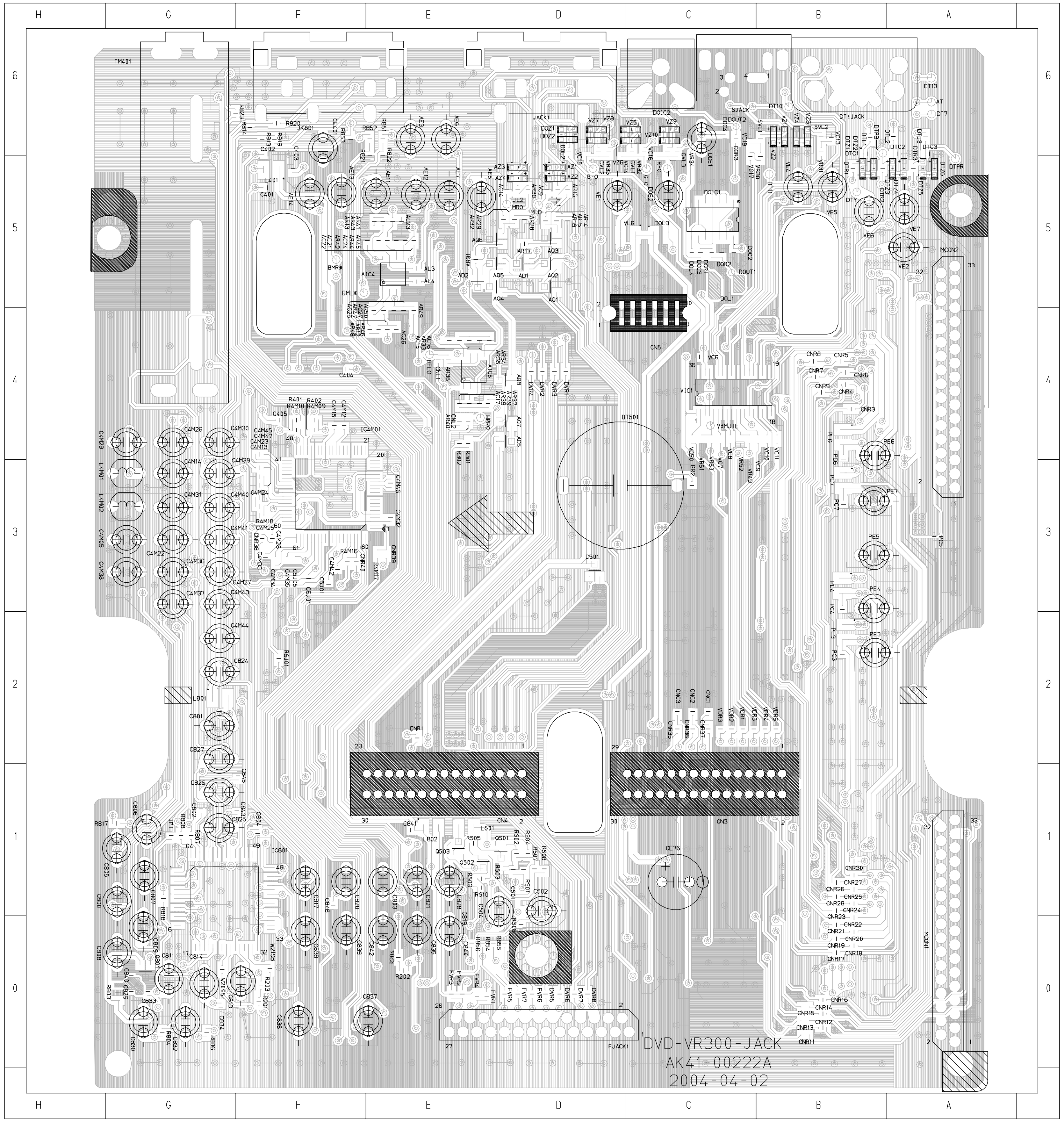

H
G
F
E
D
C
B
A
6
5
4
3
2
1
0
CN1
CN2
TIC2
AIC82
AIC81
4560
PCM1802
MM1563
DIC2
ATAR2
ATAR3
PIC1
TS841AB1
DIC6
74ALVT16373
DIC4
K6F8016U3M
74VHC4053
DIC5
U25
Tp2995
TP±CS0
TP±A17
FTP0
RAM416
VTP0 VTP1
VTP6 VTP5
U34

14-3 Jack PCB

COMPONENT SIDE

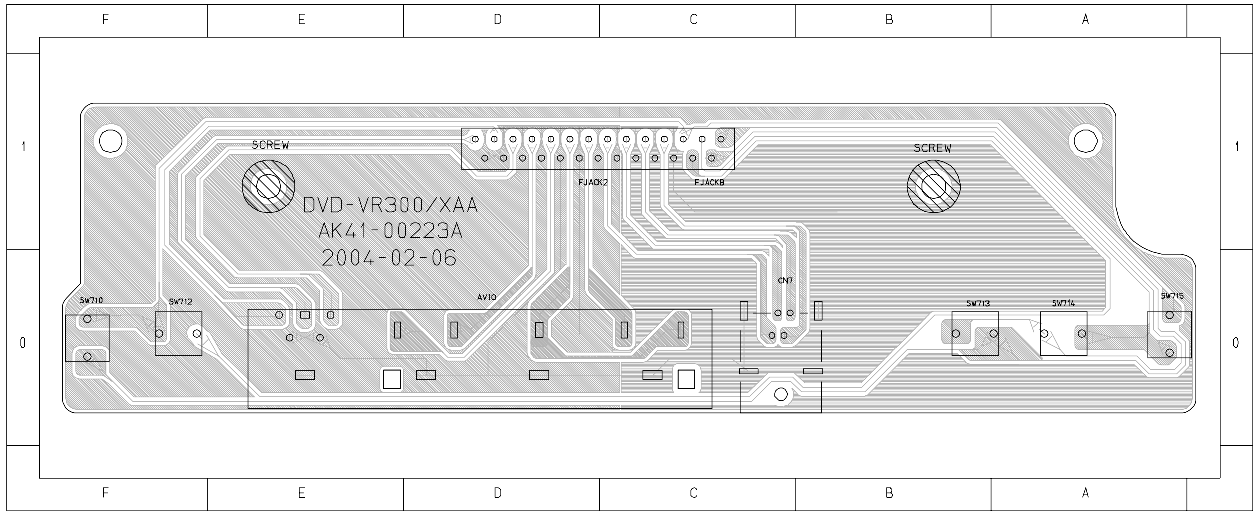

H
G
F
E
D
C
B
A
6
5
4
3
2
1
0
TM401
JACK1
SJACK
DT1JACK
MCON2
MCON1
CN5
CN4
CN3
VIC1
IC4M01
IC801
BT501
CE76
FJACK1
DVD-VR300-JACK
AK41-00222A
2004-04-02

CONDUCTOR SIDE

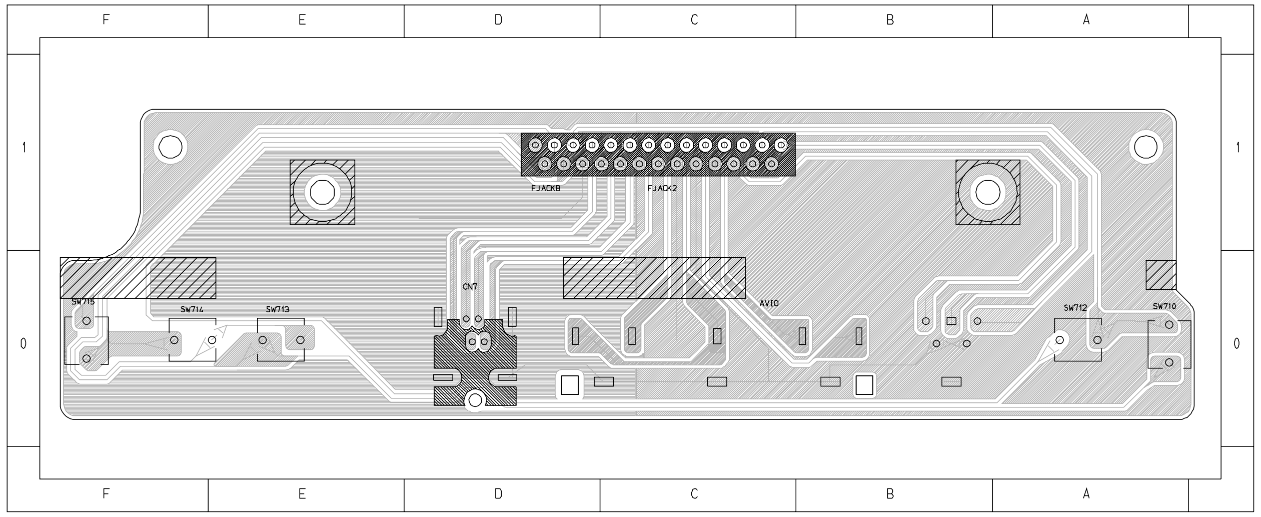

H
G
F
E
D
C
B
A
6
5
4
3
2
1
0
DVD-VR300-JACK
AK41-00222A
2004-04-02

14-4 Front PCB

COMPONENT SIDE

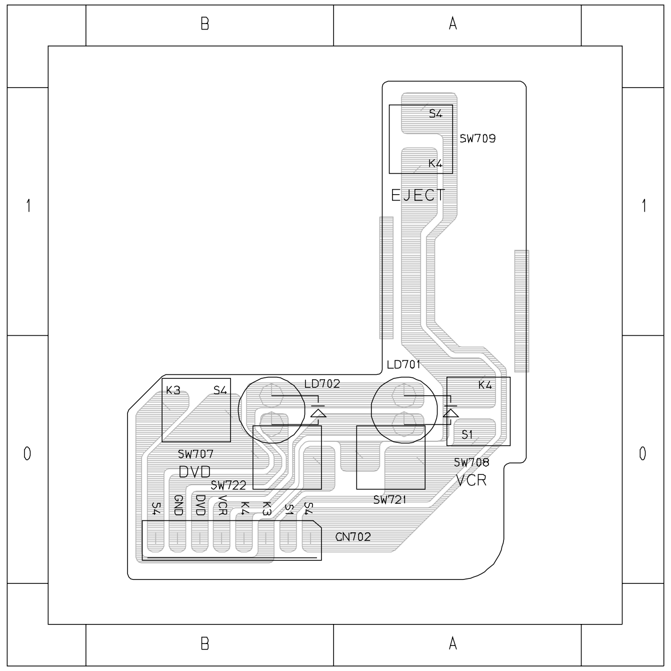

F
E
D
C
B
A
1
0
SCREW
SCREW
DVD-VR300/XAA
AK41-00223A
2004-02-06
FJACK2
FJACK8
CN7
AV10
SW710
SW712
SW713
SW714
SW715

CONDUCTOR SIDE

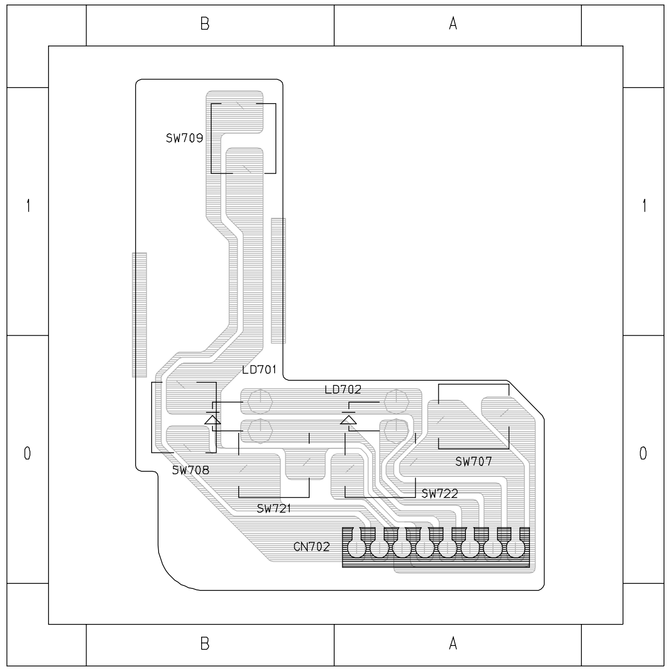

F
E
D
C
B
A
1
0
FJACK8
FJACK2
CN7
AV10
SW715
SW714
SW713
SW712
SW710

14-5 Key PCB

COMPONENT SIDE


B
A
1
0
S4
SW709
K4
EJECT
LD701
LD702
K3
S4
K4
S1
SW707
DVD
SW722
SW708
VCR
SW721
S4
GND
DVD
VCR
K4
K3
S1
S4
CN702

CONDUCTOR SIDE


B
A
1
0
SW709
LD701
LD702
SW708
SW707
SW722
SW721
CN702

15. Schematic Diagrams

◆ Block Identification of Main PCB - - - - 15-2

15-1 S.M.P.S (VCR Main PCB) - - - - 15-3

15-2 Power (VCR Main PCB) - - - - 15-4

15-3 Logic (VCR Main PCB) - - - - 15-5

15-4 A/V (VCR Main PCB) - - - - 15-6

15-5 Hi-Fi/MTS (VCR Main PCB) - - - - 15-7

15-6 Main Connector (DVD Main PCB) - - - - 15-8

15-7 DDR (DVD Main PCB) - - - - 15-9

15-8 IEEE 1394 (DVD Main PCB) - - - - 15-10

15-9 Video Decoder (DVD Main PCB) - - - - 15-11

15-10 A/V Codec (DVD Main PCB) - - - - 15-12

15-11 Audio In/Out (DVD Main PCB) - - - - 15-13

15-12 FLASH & SRAM (DVD Main PCB) - - - - 15-14

15-13 MUX & TM & A/V Input (Jack PCB) - - - - 15-15

15-14 MUX Connector (Jack PCB) - - - - 15-16

15-15 Audio Out (Jack PCB) - - - - 15-17

15-16 Video Out (Jack PCB) - - - - 15-18

15-17 Front/Key (Front PCB) - - - - 15-19

Note

For schematic Diagram
- Resistors are in ohms, 1/8W unless otherwise noted.

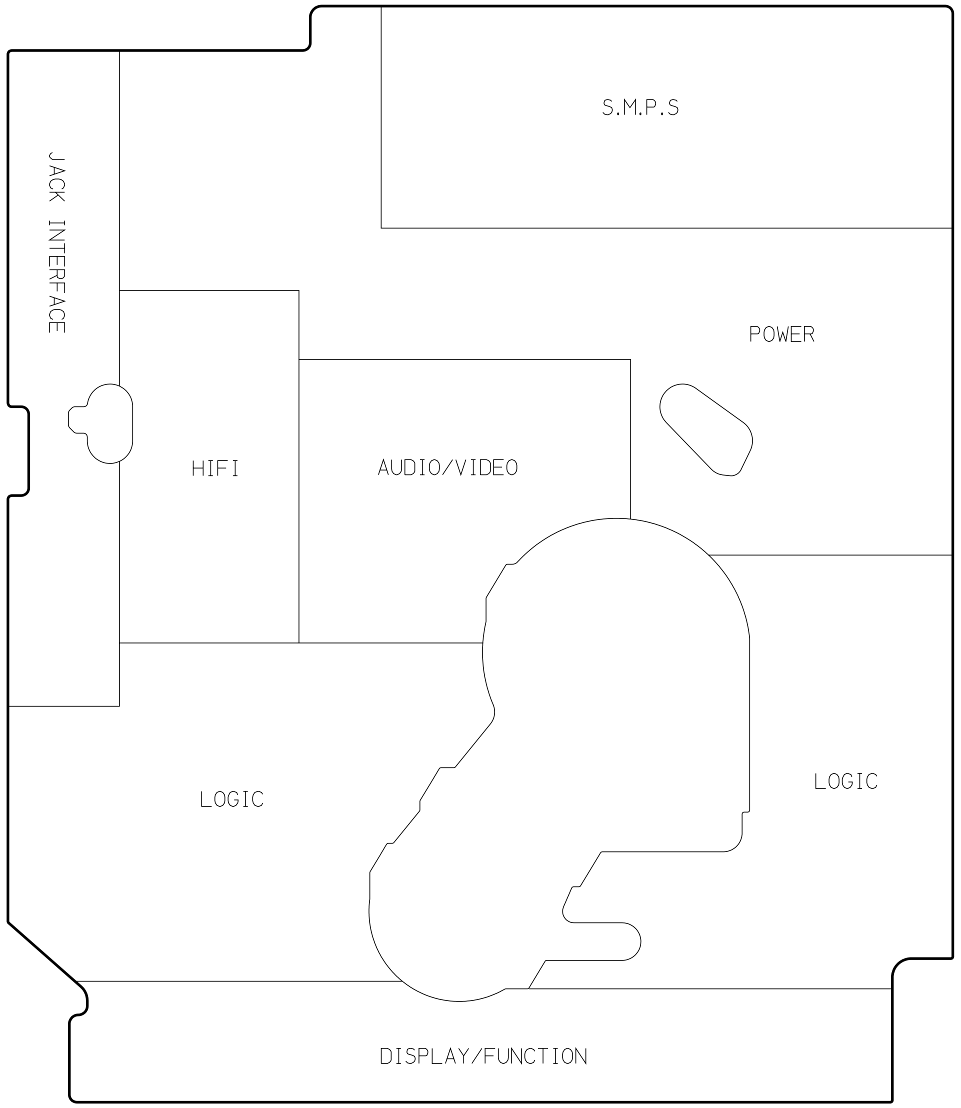
Special note :
Most semiconductor devices are electrostatically sensitive and therefore require the special handling techniques described under the "electrostatically sensitive (ES) devices" section of this service manual.

Note :
Do not use the part number shown on this drawing for ordering. The correct part number is shown in the parts list (may be slightly different or amended since this drawing was prepared).

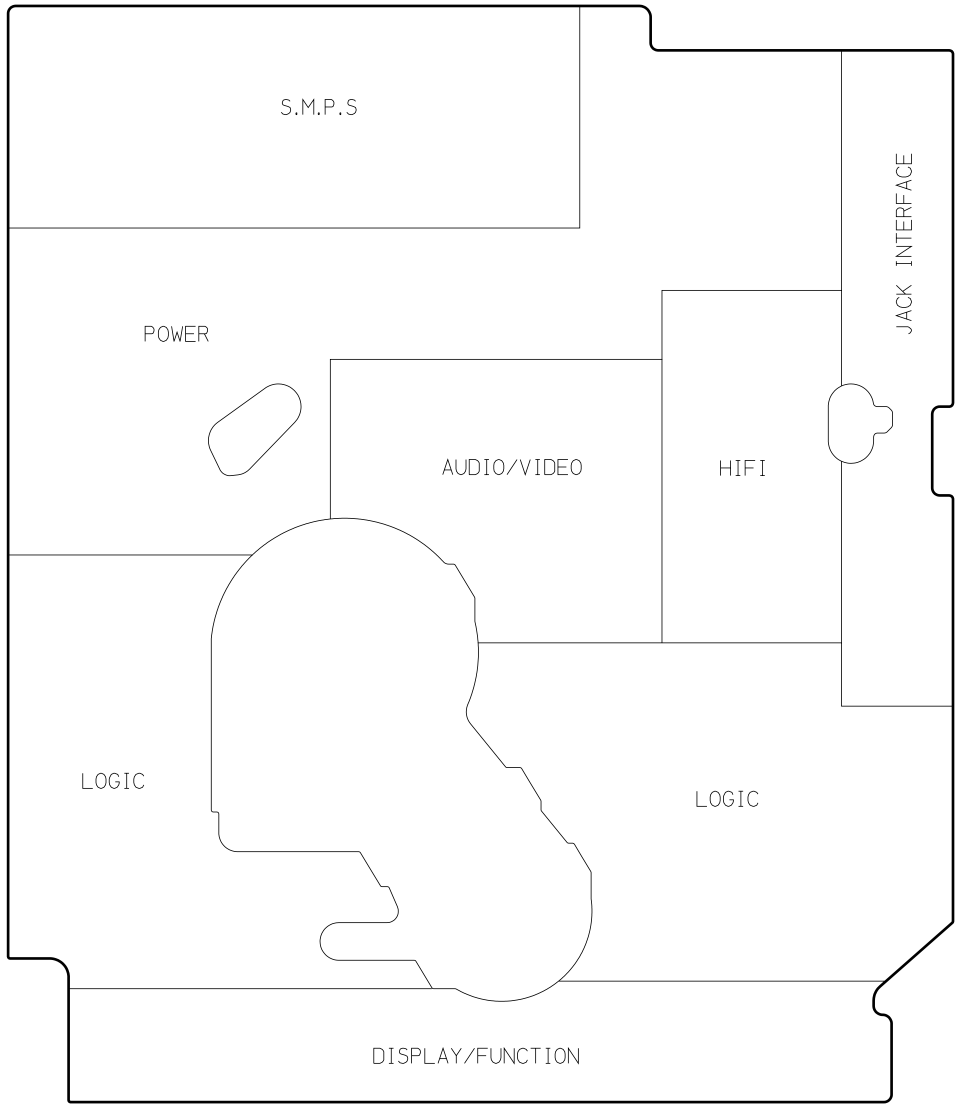
Important safety notices :
Components identified with the mark ⚠ have the special characteristics for safety. When replacing any of these components.
Use only the same type.

◆ Block Identification of Main PCB

VCR MAIN PCB

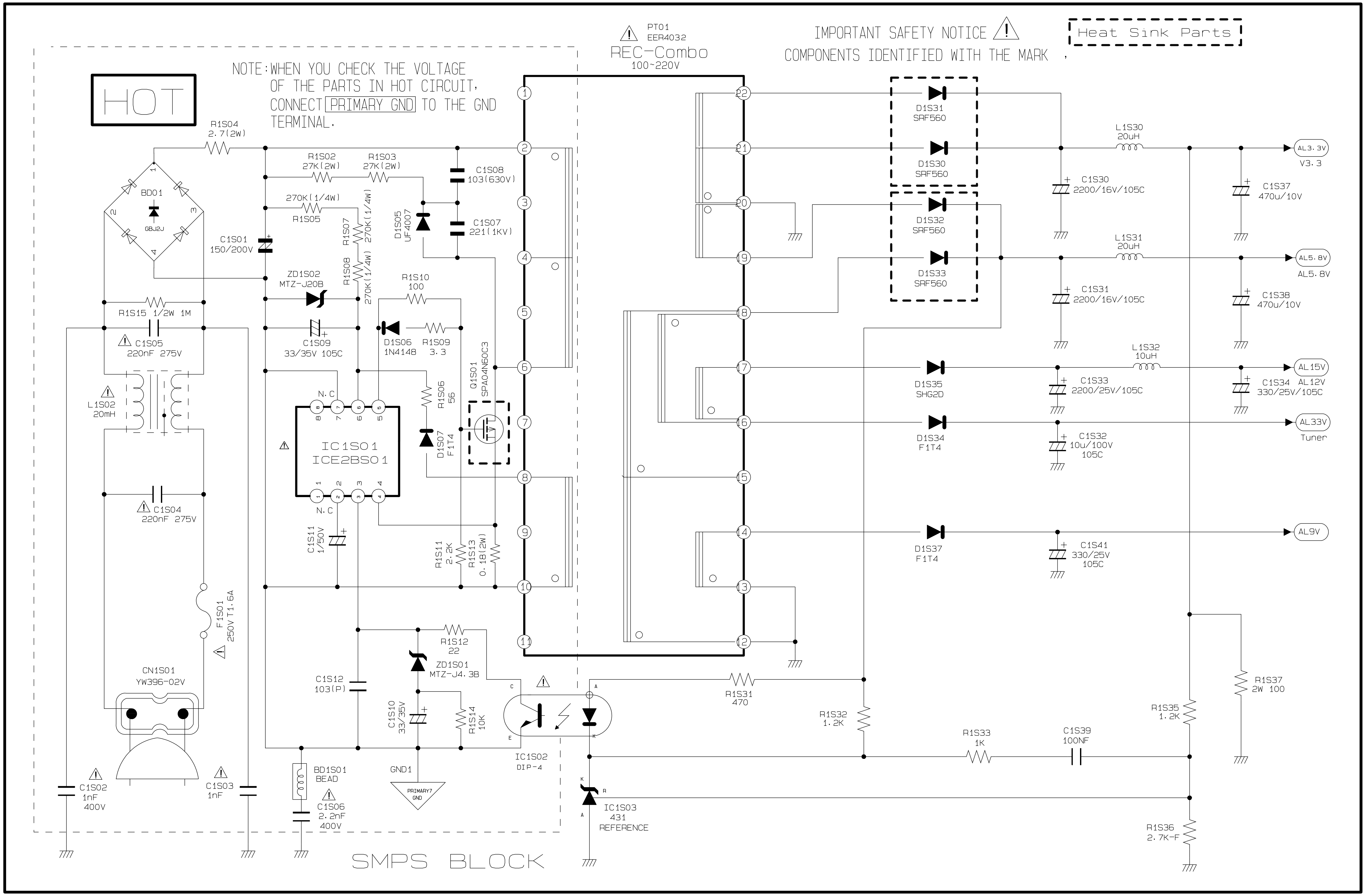

S.M.P.S
JACK INTERFACE
POWER
HIFI
AUDIO/VIDEO
LOGIC
LOGIC
DISPLAY/FUNCTION

<Component Side>

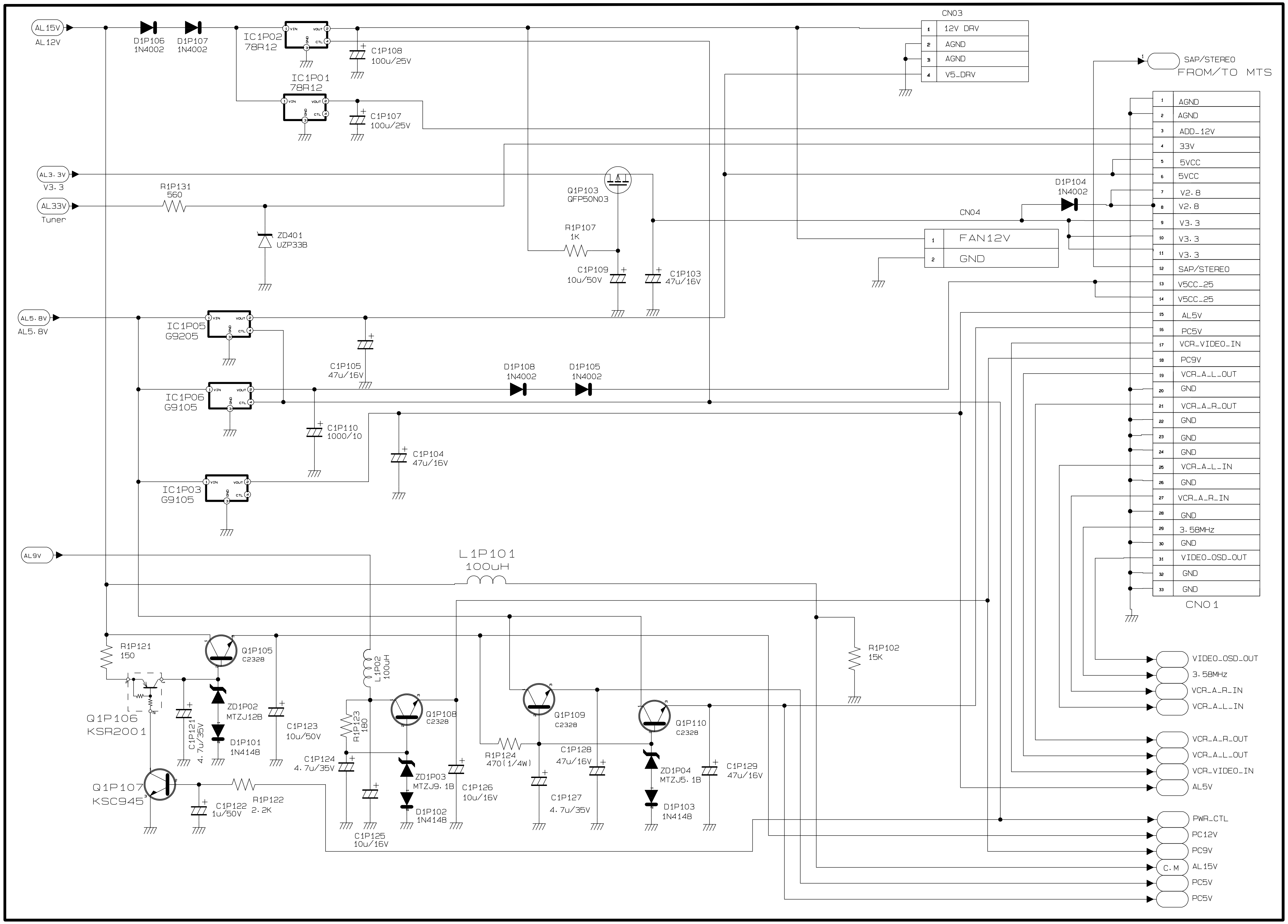

S.M.P.S
JACK INTERFACE
POWER
AUDIO/VIDEO
HIFI
LOGIC
LOGIC
DISPLAY/FUNCTION

<Conductor Side>

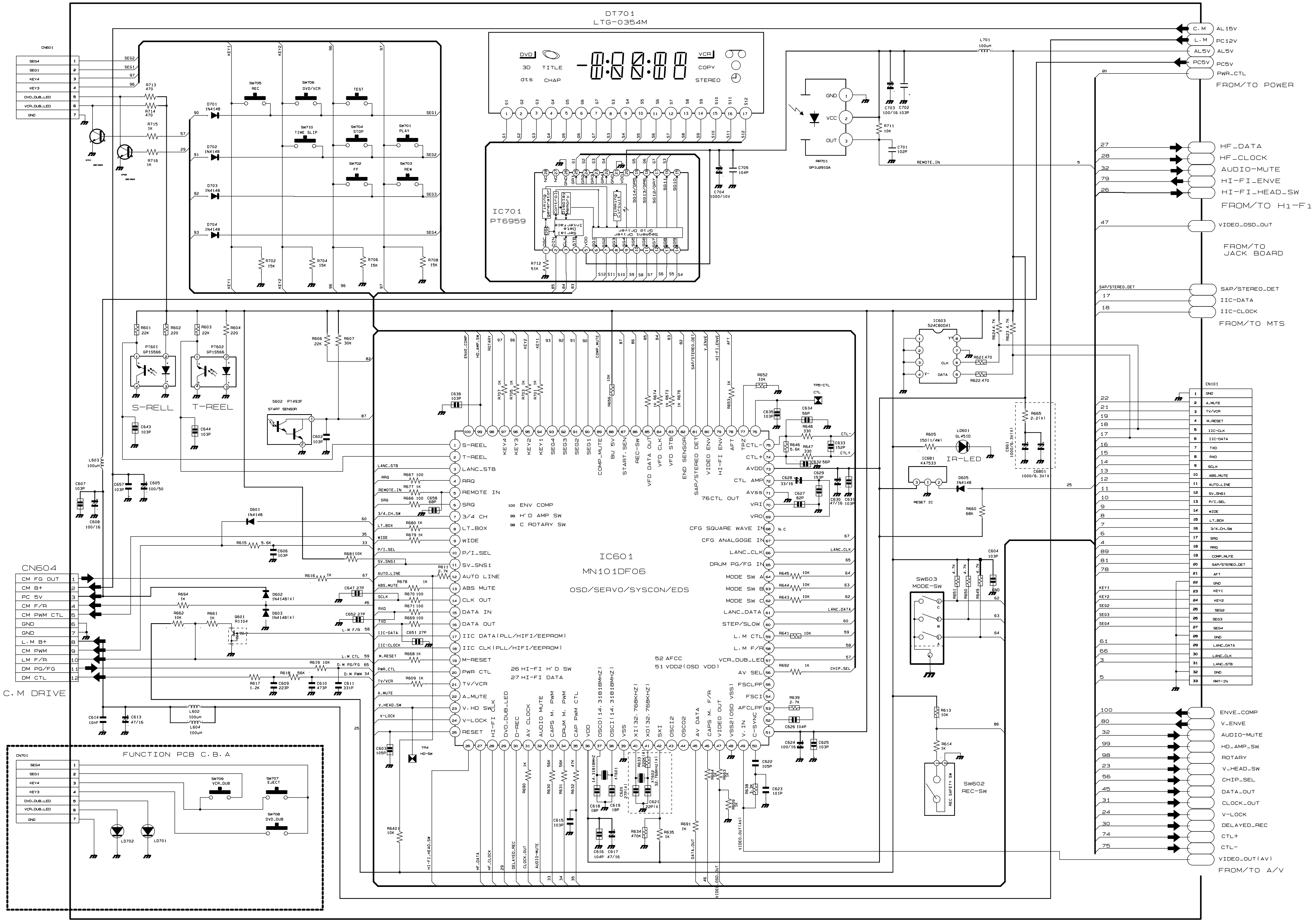
15-1 S.M.P.S (VCR Main PCB)


HOT
NOTE:WHEN YOU CHECK THE VOLTAGE
OF THE PARTS IN HOT CIRCUIT,
CONNECT PRIMARY GND TO THE GND
TERMINAL.
PT01
EER4032
REC-Combo
100~220V
IMPORTANT SAFETY NOTICE
COMPONENTS IDENTIFIED WITH THE MARK
Heat Sink Parts
R1S04
2.7(2W)
BD01
GBJ2J
R1S02
27K(2W)
R1S03
27K(2W)
C1S08
103(630V)
270K(1/4W)
R1S05
R1S07
270K(1/4W)
D1S05
UF4007
C1S07
221(1KV)
C1S01
150/200V
ZD1S02
MTZ-J20B
R1S08
270K(1/4W)
R1S10
100
R1S15 1/2W 1M
C1S05
220nF 275V
C1S09
33/35V 105C
D1S06
1N4148
R1S09
3.3
Q1S01
SPA04N60C3
L1S02
20mH
N.C
R1S06
56
IC1S01
ICE2BS01
D1S07
F1T4
C1S04
220nF 275V
C1S11
1/50V
R1S11
2.2K
R1S13
0.18(2W)
F1S01
250V T1.6A
R1S12
22
ZD1S01
MTZ-J4.3B
CN1S01
YW396-02V
C1S12
103(P)
C1S10
33/35V
R1S14
10K
IC1S02
DIP-4
C1S02
1nF
400V
C1S03
1nF
BD1S01
BEAD
GND1
PRIMARY GND
C1S06
2.2nF
400V
SMPS BLOCK
D1S31
SRF560
D1S30
SRF560
D1S32
SRF560
D1S33
SRF560
L1S30
20uH
C1S30
2200/16V/105C
C1S37
470u/10V
AL3.3V
V3.3
L1S31
20uH
C1S31
2200/16V/105C
C1S38
470u/10V
AL5.8V
AL5.8V
L1S32
10uH
D1S35
SHG2D
C1S33
2200/25V/105C
C1S34
330/25V/105C
AL15V
AL12V
D1S34
F1T4
C1S32
10u/100V
105C
AL33V
Tuner
D1S37
F1T4
C1S41
330/25V
105C
AL9V
R1S31
470
R1S32
1.2K
R1S33
1K
C1S39
100NF
R1S35
1.2K
R1S37
2W 100
IC1S03
431
REFERENCE
R1S36
2.7K-F

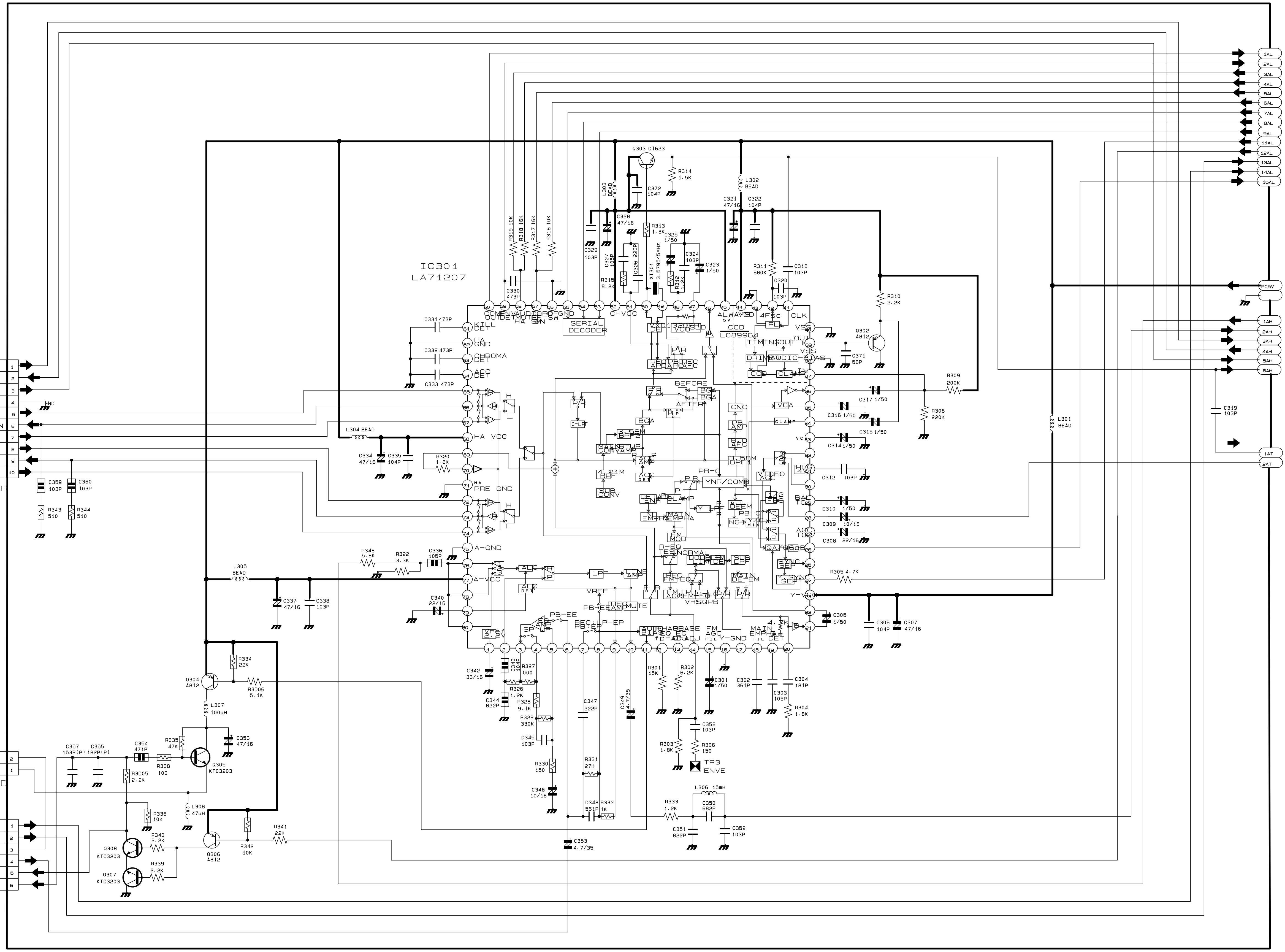
15-2 Power (VCR Main PCB)


AL15V
AL12V
D1P106
1N4002
D1P107
1N4002
IC1P02
78R12
C1P108
100u/25V
IC1P01
78R12
C1P107
100u/25V
CN03
12V DRV
AGND
AGND
V5_DRV
SAP/STEREO
FROM/TO MTS
AL3.3V
V3.3
AL33V
Tuner
R1P131
560
ZD401
UZP33B
Q1P103
QFP50N03
R1P107
1K
C1P109
10u/50V
C1P103
47u/16V
D1P104
1N4002
CN04
FAN12V
GND
AL5.8V
AL5.8V
IC1P05
G9205
C1P105
47u/16V
IC1P06
G9105
D1P108
1N4002
D1P105
1N4002
C1P110
1000/10
C1P104
47u/16V
IC1P03
G9105
AL9V
L1P101
100uH
R1P121
150
Q1P105
C2328
Q1P106
KSR2001
C1P121
4.7u/35V
ZD1P02
MTZJ12B
D1P101
1N4148
C1P123
10u/50V
Q1P107
KSC945
C1P122
1u/50V
R1P122
2.2K
L1P02
100uH
R1P123
180
C1P124
4.7u/35V
C1P125
10u/16V
Q1P108
C2328
ZD1P03
MTZJ9.1B
D1P102
1N4148
C1P126
10u/16V
R1P124
470(1/4W)
Q1P109
C2328
C1P128
47u/16V
C1P127
4.7u/35V
Q1P110
C2328
ZD1P04
MTZJ5.1B
D1P103
1N4148
C1P129
47u/16V
R1P102
15K
AGND
AGND
ADD_12V
33V
5VCC
5VCC
V2.8
V2.8
V3.3
V3.3
V3.3
SAP/STEREO
V5CC_25
V5CC_25
AL5V
PC5V
VCR_VIDEO_IN
PC9V
VCR_A_L_OUT
GND
VCR_A_R_OUT
GND
GND
GND
VCR_A_L_IN
GND
VCR_A_R_IN
GND
3.58MHz
GND
VIDEO_OSD_OUT
GND
GND
CN01
VIDEO_OSD_OUT
3.58MHz
VCR_A_R_IN
VCR_A_L_IN
VCR_A_R_OUT
VCR_A_L_OUT
VCR_VIDEO_IN
AL5V
PWR_CTL
PC12V
PC9V
C.M
AL15V
PC5V
PC5V

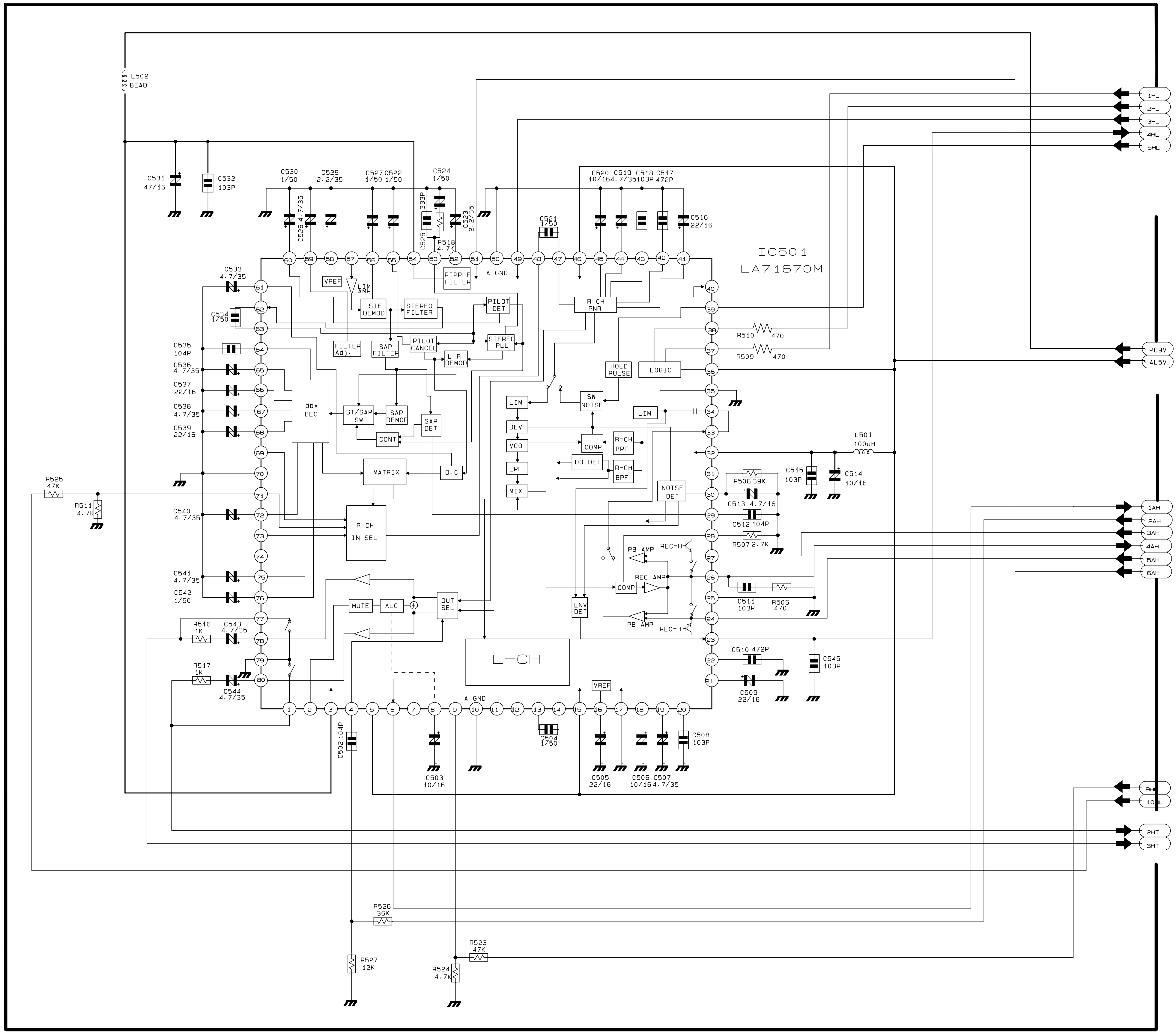
15-3 Logic (VCR Main PCB)


DT701
LTG-0354M
CN601
IC701
PT6959
S-RELL
T-REEL
S602 PT493F
START SENSOR
CN604
CM FG OUT
CM B+
PC 5V
CM F/R
CM PWM CTL
GND
GND
L.M B+
CM PWM
LM F/R
DM PG/FG
DM CTL
C.M DRIVE
FUNCTION PCB C.B.A
CN701
SW709 VCR.DUB
SW707 EJECT
SW708 DVD.DUB
LD702
LD701
IC601
MN101DF06
OSD/SERVO/SYSCON/EDS
IC603
524C80D41
IC681
K47533
IR-LED
RESET IC
SW603
MODE-SW
SW602
REC-SW
RM701
GP1U281QA
L701
100uH
C.M AL15V
L.M PC12V
AL5V
PC5V
PWR_CTL
FROM/TO POWER
HF_DATA
HF_CLOCK
AUDIO-MUTE
HI-FI_ENVE
HI-FI_HEAD_SW
FROM/TO Hi-Fi
VIDEO_OSD_OUT
FROM/TO JACK BOARD
SAP/STEREO_DET
IIC-DATA
IIC-CLOCK
FROM/TO MTS
CN101
ENVE_COMP
V_ENVE
AUDIO-MUTE
HD_AMP_SW
ROTARY
V_HEAD_SW
CHIP_SEL
DATA_OUT
CLOCK_OUT
V-LOCK
DELAYED_REC
CTL+
CTL-
VIDEO_OUT(AV)
FROM/TO A/V

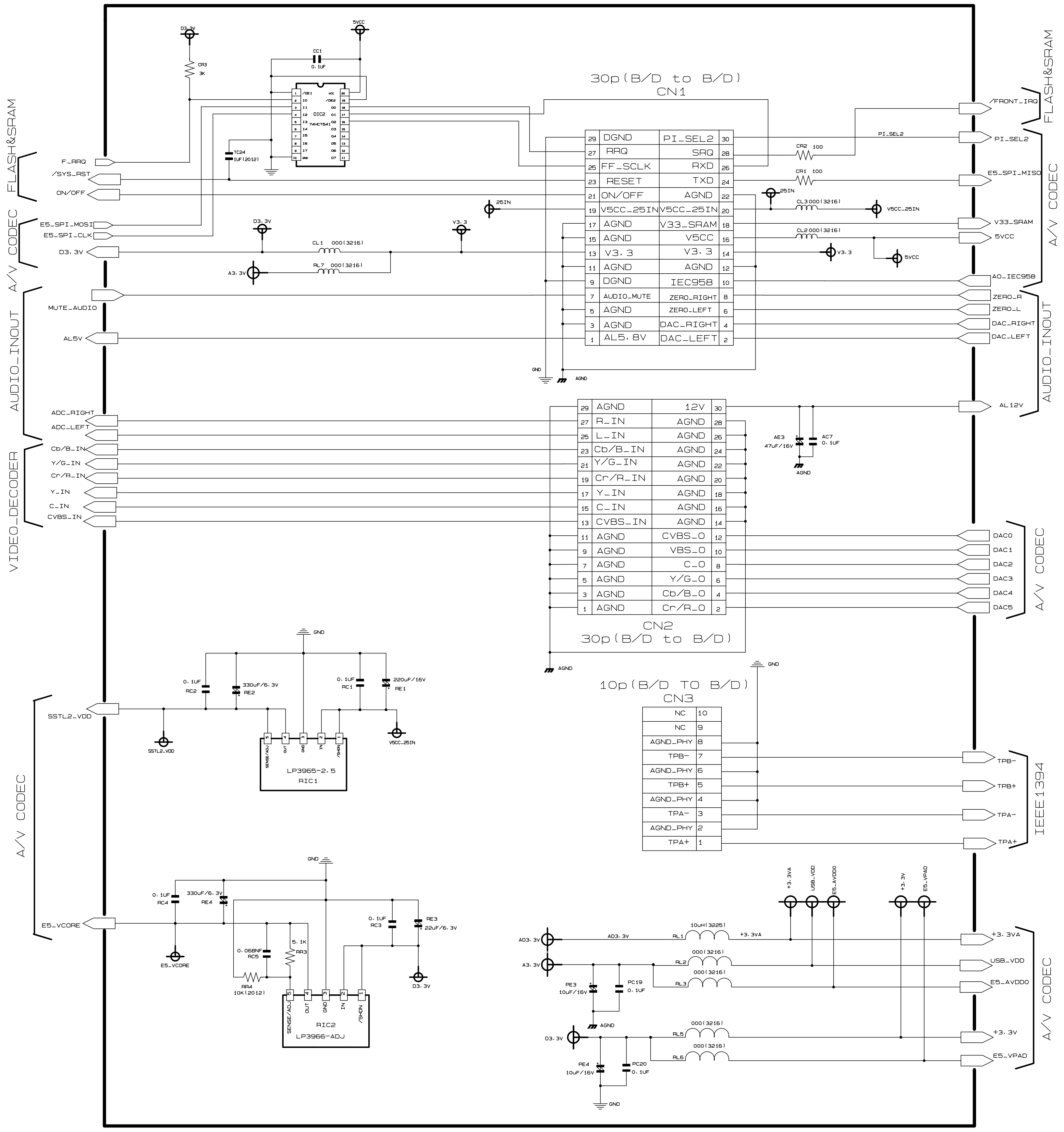
15-4 A/V (VCR Main PCB)


IC301
LA71207
CN301
PB FM1
REC FM
PB FM2
GND
SLP CH1
SLP COMMON
SLP CH2
SP CH2
SP COMMON
SP CH1
DRUM WAFER
CN302
FULL ERASE
A-COMMON
ERASE HEAD
CN303
CTL-
CTL+
FULL ERASE
PB
REC
AUDIO ERASE
ACE HEAD
1AL ENVE COMP
2AL V.ENVE
3AL AUDIO-MUTE
4AL HD AMP SW
5AL ROTARY
6AL V.HD SW
7AL CHIP SEL. IN
8AL DATA IN
9AL CLOCK IN
11AL V-LOCK
12AL DELAYED REC
13AL CTL+
14AL CTL-
15AL VCR_OUT(AV)
FROM/TO LOGIC
PC5V
GND
FROM POWER
1AH MONO AUDIO FROM HIFI
2AH MONO AUDIO TO HIFI
3AH PB FM1
4AH REC FM
5AH PB FM2
6AH 3.58MHz
FROM/TO HI-FI
1AT 3.58MHZ
2AT VCR_VIDEO_OUT
FROM/TO I/O
Q303 C1623
Q302 A812
Q304 A812
Q305 KTC3203
Q306 A812
Q307 KTC3203
Q308 KTC3203
X301 3.579545MHz
L301 BEAD
L302 BEAD
L303 BEAD
L304 BEAD
L305 BEAD
L306 15mH
L307 100uH
L308 47uH
TP3 ENVE
SERIAL DECODER
CCD LC89964
YNR/COMB
A-GND
A-VCC
HA VCC
PRE GND
C-VCC
Y-VCC

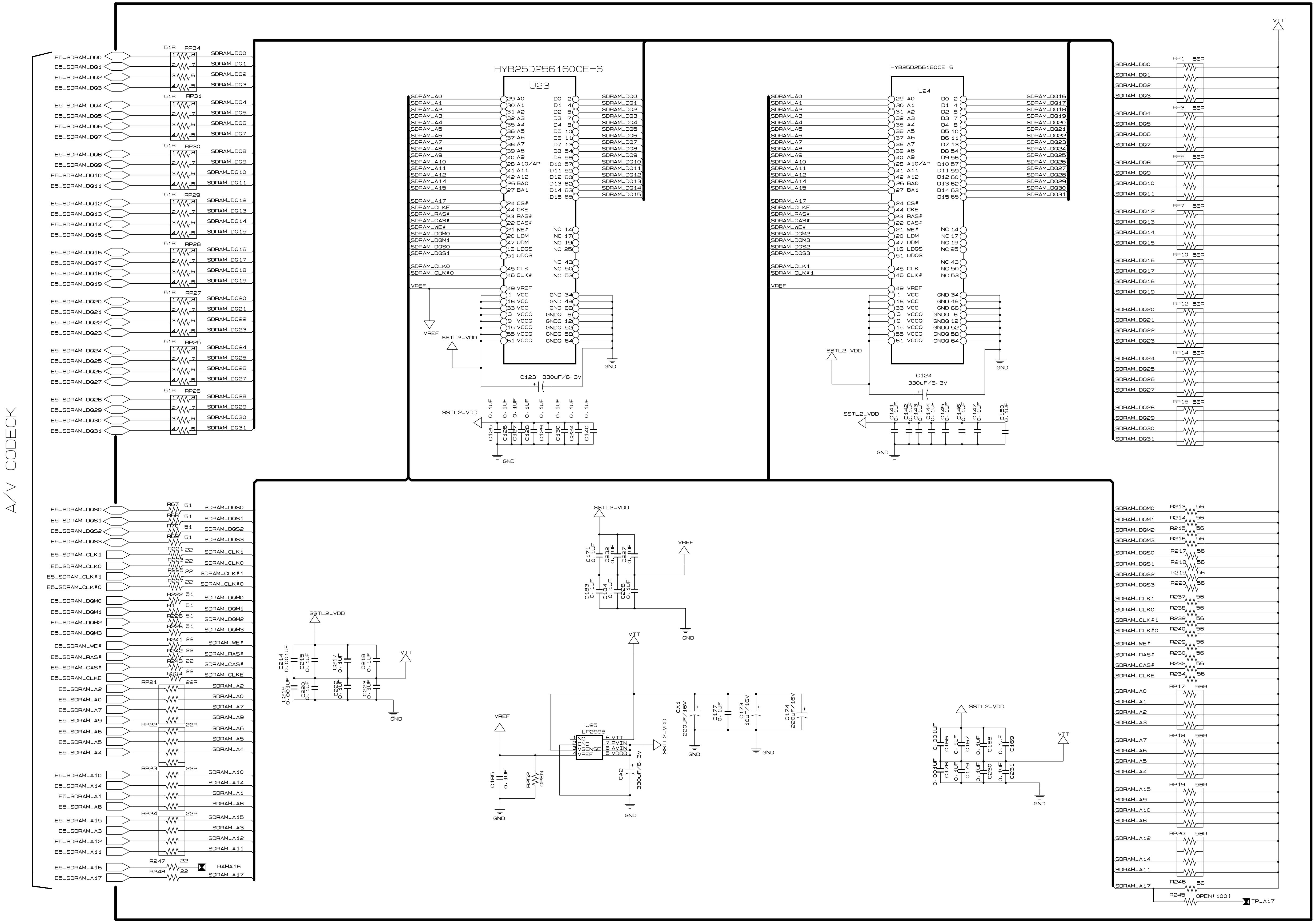
15-5 Hi-Fi/MTS (VCR Main PCB)


IC501
LA71670M
L502 BEAD
C531 47/16
C532 103P
C530 1/50
C529 2.2/35
C527 1/50
C522 1/50
C524 1/50
C526 4.7/35
C525 333P
R518 4.7K
C523 2.2/35
C520 10/16
C519 4.7/35
C518 103P
C517 472P
C521 1/50
C516 22/16
C533 4.7/35
C534 1/50
C535 104P
C536 4.7/35
C537 22/16
C538 4.7/35
C539 22/16
C540 4.7/35
C541 4.7/35
C542 1/50
R516 1K
C543 4.7/35
R517 1K
C544 4.7/35
R525 47K
R511 4.7K
VREF
LIM AMP
RIPPLE FILTER
A GND
SIF DEMOD
STEREO FILTER
PILOT DET
FILTER Adj.
SAP FILTER
PILOT CANCEL
STEREO PLL
L-R DEMOD
R-CH PNR
HOLD PULSE
LOGIC
dbx DEC
ST/SAP SW
SAP DEMOD
SAP DET
CONT
MATRIX
D.C
R-CH IN SEL
LIM
DEV
VCO
LPF
MIX
SW NOISE
COMP
R-CH BPF
DO DET
NOISE DET
PB AMP
REC-H
REC AMP
ENV DET
MUTE
ALC
OUT SEL
L-CH
R510 470
R509 470
L501 100uH
C515 103P
C514 10/16
R508 39K
C513 4.7/16
C512 104P
R507 2.7K
C511 103P
R506 470
C510 472P
C545 103P
C509 22/16
C502 104P
C503 10/16
C504 1/50
C505 22/16
C506 10/16
C507 4.7/35
C508 103P
R526 36K
R527 12K
R523 47K
R524 4.7K
1HL IIC-DATA
2HL IIC-CLOCK
3HL AUDIO-MUTE
4HL HI-FI_ENV
5HL HI-FI_HEAD_SW
FROM OR TO LOGIC
PC9V PC9V
AL5V AL5V
FROM POWER
1AH MONO AUDIO TO AV
2AH MONO AUDIO FROM AV
3AH PB FM1
4AH REC FM
5AH PB FM2
6AH 3.58MHz
FROM OR TO A/V
9HL VCR_A_L IN (FROM VCR_A_L_OUT)
10HL VCR_A_R_IN (FROM VCR_A_R_OUT)
2HT VCR_A_L_OUT (TO VCR_A_L_IN)
3HT VCR_A_R_OUT (TO VCR_A_R_IN)
FROM OR TO I/O

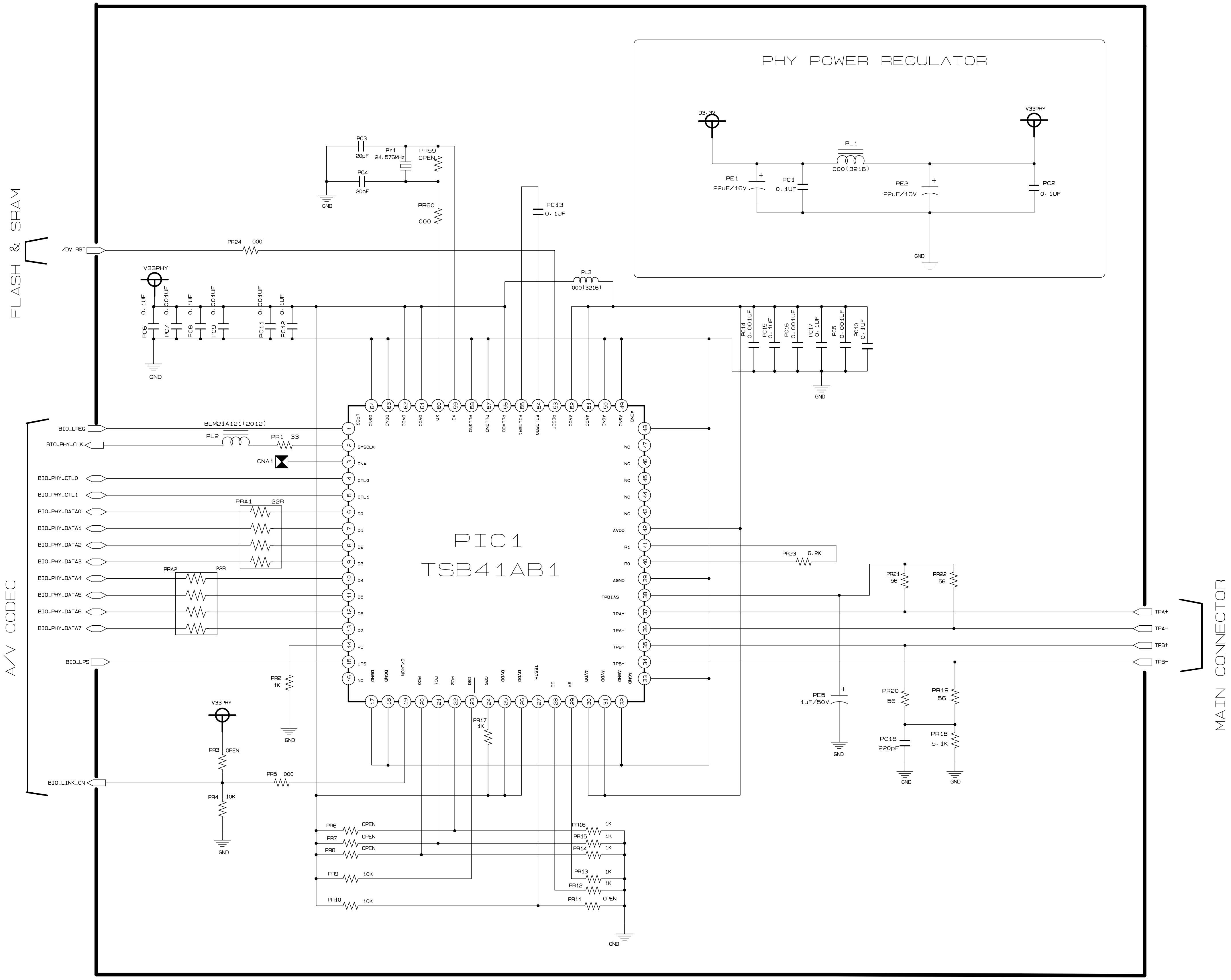
15-6 Main Connector (DVD Main PCB)


FLASH&SRAM
F_RRQ
/SYS_RST
ON/OFF
A/V CODEC
E5_SPI_MOSI
E5_SPI_CLK
D3. 3V
AUDIO_INOUT
MUTE_AUDIO
AL5V
ADC_RIGHT
ADC_LEFT
VIDEO_DECODER
Cb/B_IN
Y/G_IN
Cr/R_IN
Y_IN
C_IN
CVBS_IN
D3.3V
CR3
3K
5VCC
CC1
0.1UF
DIC2
74HCT541
/OE1
/OE2
VCC
GND
I0
I1
I2
I3
I4
I5
I6
I7
O0
O1
O2
O3
O4
O5
O6
O7
TC24
1UF(2012)
25IN
V3.3
CL1 000(3216)
RL7 000(3216)
A3.3V
30p(B/D to B/D)
CN1
29 DGND PI_SEL2 30
27 RRQ SRQ 28
25 FF_SCLK RXD 26
23 RESET TXD 24
21 ON/OFF AGND 22
19 V5CC_25IN V5CC_25IN 20
17 AGND V33_SRAM 18
15 AGND V5CC 16
13 V3. 3 V3. 3 14
11 AGND AGND 12
9 DGND IEC958 10
7 AUDIO_MUTE ZERO_RIGHT 8
5 AGND ZERO_LEFT 6
3 AGND DAC_RIGHT 4
1 AL5. 8V DAC_LEFT 2
GND
AGND
CR2 100
CR1 100
PI_SEL2
CL3 000(3216)
CL2 000(3216)
V5CC_25IN
V3. 3
5VCC
/FRONT_IRQ
PI_SEL2
E5_SPI_MISO
V33_SRAM
5VCC
AO_IEC958
ZERO_R
ZERO_L
DAC_RIGHT
DAC_LEFT
AL12V
29 AGND 12V 30
27 R_IN AGND 28
25 L_IN AGND 26
23 Cb/B_IN AGND 24
21 Y/G_IN AGND 22
19 Cr/R_IN AGND 20
17 Y_IN AGND 18
15 C_IN AGND 16
13 CVBS_IN AGND 14
11 AGND CVBS_O 12
9 AGND VBS_O 10
7 AGND C_O 8
5 AGND Y/G_O 6
3 AGND Cb/B_O 4
1 AGND Cr/R_O 2
CN2
30p(B/D to B/D)
AE3
47uF/16V
AC7
0.1UF
DAC0
DAC1
DAC2
DAC3
DAC4
DAC5
10p(B/D TO B/D)
CN3
NC 10
NC 9
AGND_PHY 8
TPB- 7
AGND_PHY 6
TPB+ 5
AGND_PHY 4
TPA- 3
AGND_PHY 2
TPA+ 1
TPB-
TPB+
TPA-
TPA+
IEEE1394
SSTL2_VDD
0.1UF
RC2
330uF/6.3V
RE2
0.1UF
RC1
220uF/16V
RE1
V5CC_25IN
SENSE/ADJ
OUT
IN
/SHDN
LP3965-2.5
RIC1
E5_VCORE
0.1UF
RC4
330uF/6.3V
RE4
0.068NF
RC5
5.1K
RR3
RR4
10K(2012)
0.1UF
RC3
RE3
22uF/6.3V
D3.3V
RIC2
LP3966-ADJ
AD3.3V
A3.3V
RL1 10uH(3225)
+3.3VA
RL2 000(3216)
RL3 000(3216)
PE3
10uF/16V
PC19
0.1UF
RL5 000(3216)
RL6 000(3216)
PE4
10uF/16V
PC20
0.1UF
+3.3VA
USB_VDD
E5_AVDD0
+3.3V
E5_VPAD

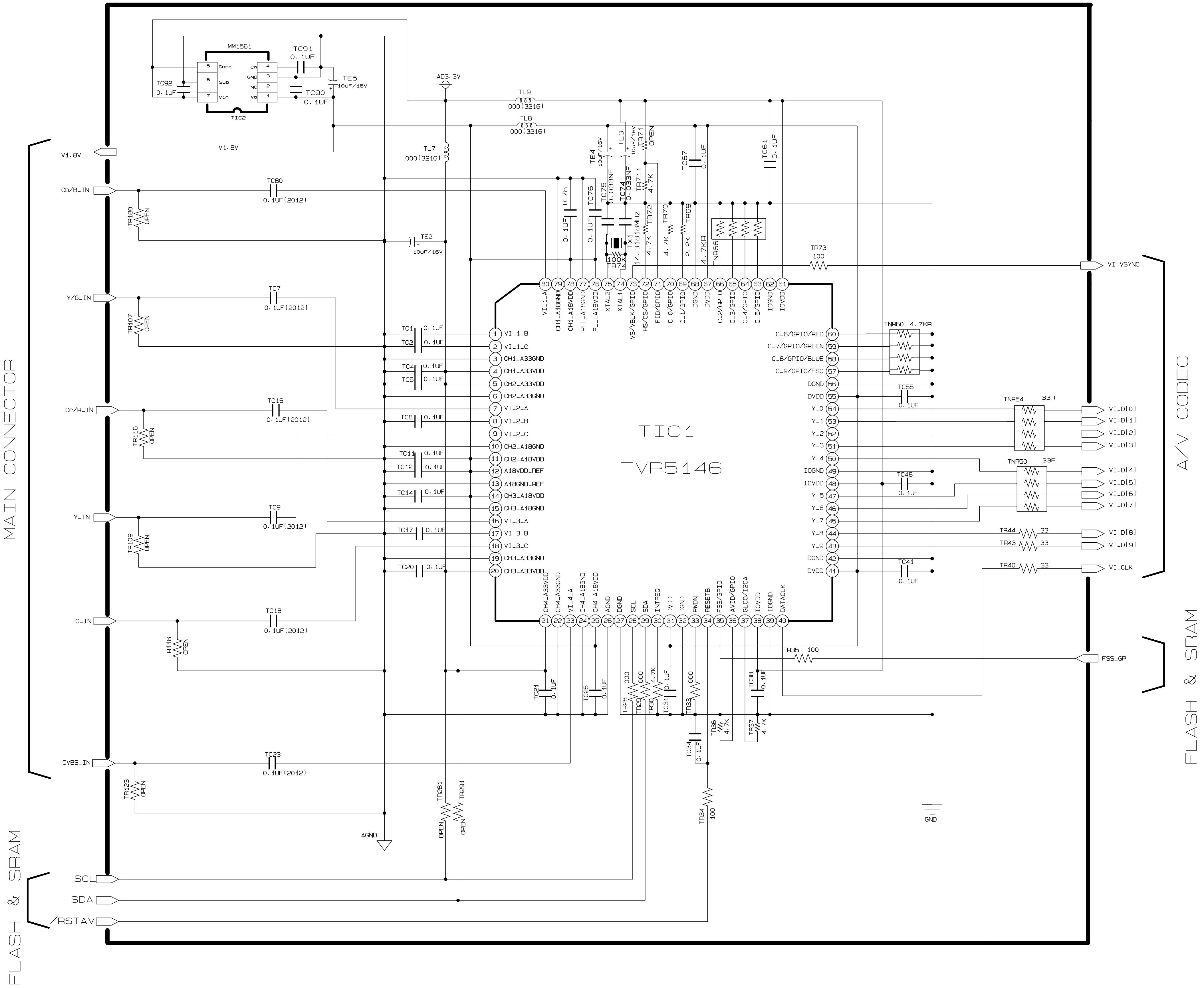
15-7 DDR (DVD Main PCB)


A/V CODECK
HYB25D256160CE-6
U23
U24
U25
LP2995
E5_SDRAM_DQ0
E5_SDRAM_DQ31
SDRAM_DQ0
SDRAM_DQ31
E5_SDRAM_DQS0
E5_SDRAM_DQS1
E5_SDRAM_DQS2
E5_SDRAM_DQS3
E5_SDRAM_CLK1
E5_SDRAM_CLK0
E5_SDRAM_CLK#1
E5_SDRAM_CLK#0
E5_SDRAM_DQM0
E5_SDRAM_DQM1
E5_SDRAM_DQM2
E5_SDRAM_DQM3
E5_SDRAM_WE#
E5_SDRAM_RAS#
E5_SDRAM_CAS#
E5_SDRAM_CLKE
E5_SDRAM_A16
E5_SDRAM_A17
RAMA16
TP_A17
SSTL2_VDD
VREF
VTT
GND
C123 330uF/6.3V
C124 330uF/6.3V
CA1 220uF/16V
CA2 330uF/6.3V
C173 10uF/16V
C174 220uF/16V
51R
56R
22R
OPEN(100)

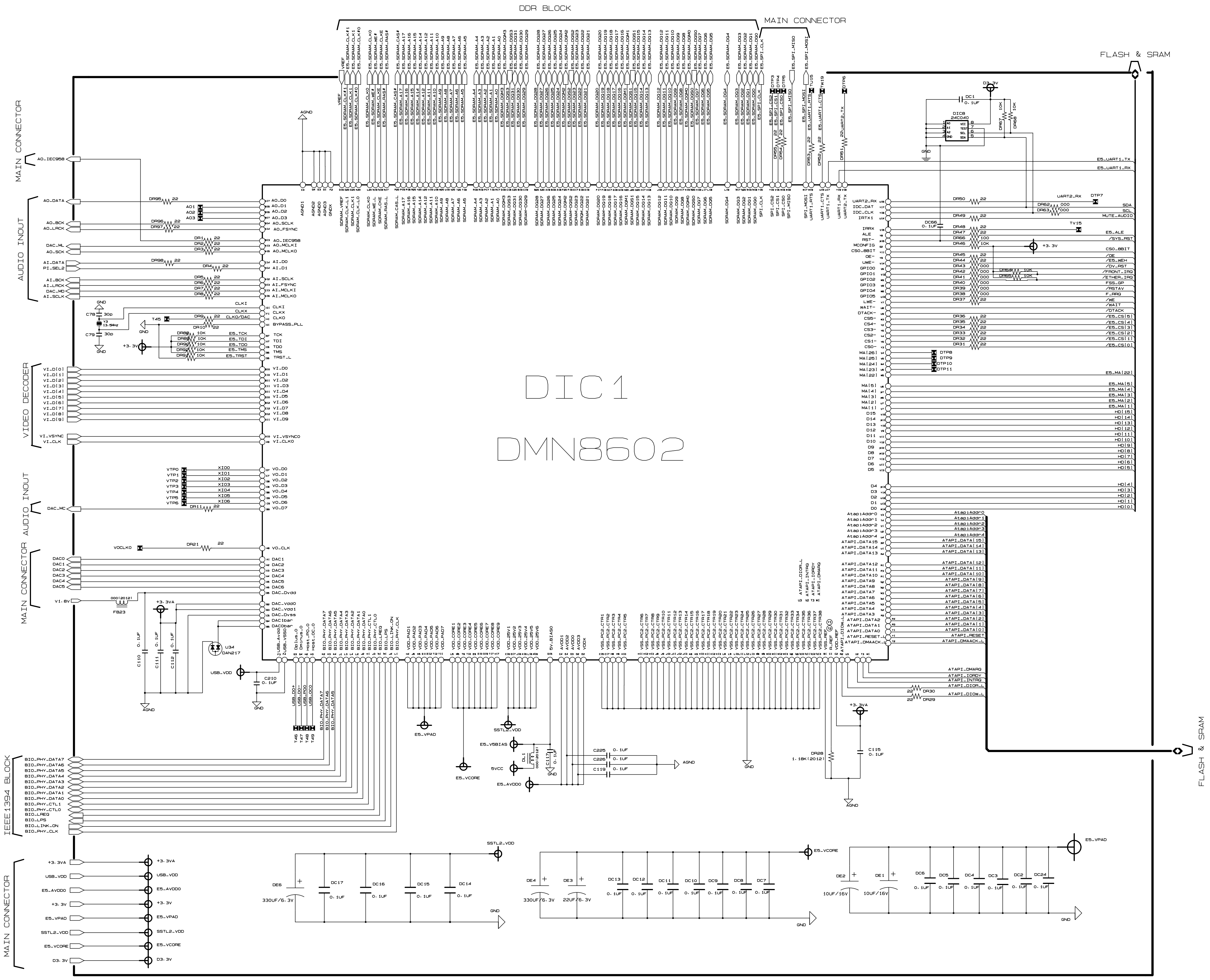
15-8 IEEE 1394 (DVD Main PCB)


PHY POWER REGULATOR
D3.3V
V33PHY
PL1
000(3216)
PE1
22uF/16V
PC1
0.1UF
PE2
22uF/16V
PC2
0.1UF
GND
FLASH & SRAM
/DV_RST
PR24 000
V33PHY
PC6 0.1UF
PC7 0.001UF
PC8 0.1UF
PC9 0.001UF
PC11 0.001UF
PC12 0.1UF
GND
PC3 20pF
PC4 20pF
PY1 24.576MHz
PR59 OPEN
PR60 000
PC13 0.1UF
PL3 000(3216)
PC14 0.001UF
PC15 0.1UF
PC16 0.001UF
PC17 0.1UF
PC5 0.001UF
PC10 0.1UF
A/V CODEC
BIO_LREQ
BIO_PHY_CLK
BIO_PHY_CTL0
BIO_PHY_CTL1
BIO_PHY_DATA0
BIO_PHY_DATA1
BIO_PHY_DATA2
BIO_PHY_DATA3
BIO_PHY_DATA4
BIO_PHY_DATA5
BIO_PHY_DATA6
BIO_PHY_DATA7
BIO_LPS
BIO_LINK_ON
BLM21A121(2012)
PL2
PR1 33
CNA1
PRA1 22R
PRA2 22R
PR2 1K
V33PHY
PR3 OPEN
PR4 10K
PR5 000
PIC1
TSB41AB1
LREQ
SYSCLK
CNA
CTL0
CTL1
D0
D1
D2
D3
D4
D5
D6
D7
PD
LPS
NC
DGND
DVDD
XO
XI
PLLGND
PLLVDD
FILTER1
FILTER0
RESET
AVDD
AGND
AVDD
R1
R0
TPBIAS
TPA+
TPA-
TPB+
TPB-
C/LKON
PC0
PC1
PC2
ISO
CPS
TESTM
SE
SM
PR17 1K
PR23 6.2K
PR21 56
PR22 56
PE5 1uF/50V
PR20 56
PR19 56
PC18 220pF
PR18 5.1K
TPA+
TPA-
TPB+
TPB-
MAIN CONNECTOR
PR6 OPEN
PR7 OPEN
PR8 OPEN
PR9 10K
PR10 10K
PR16 1K
PR15 1K
PR14 1K
PR13 1K
PR12 1K
PR11 OPEN
GND

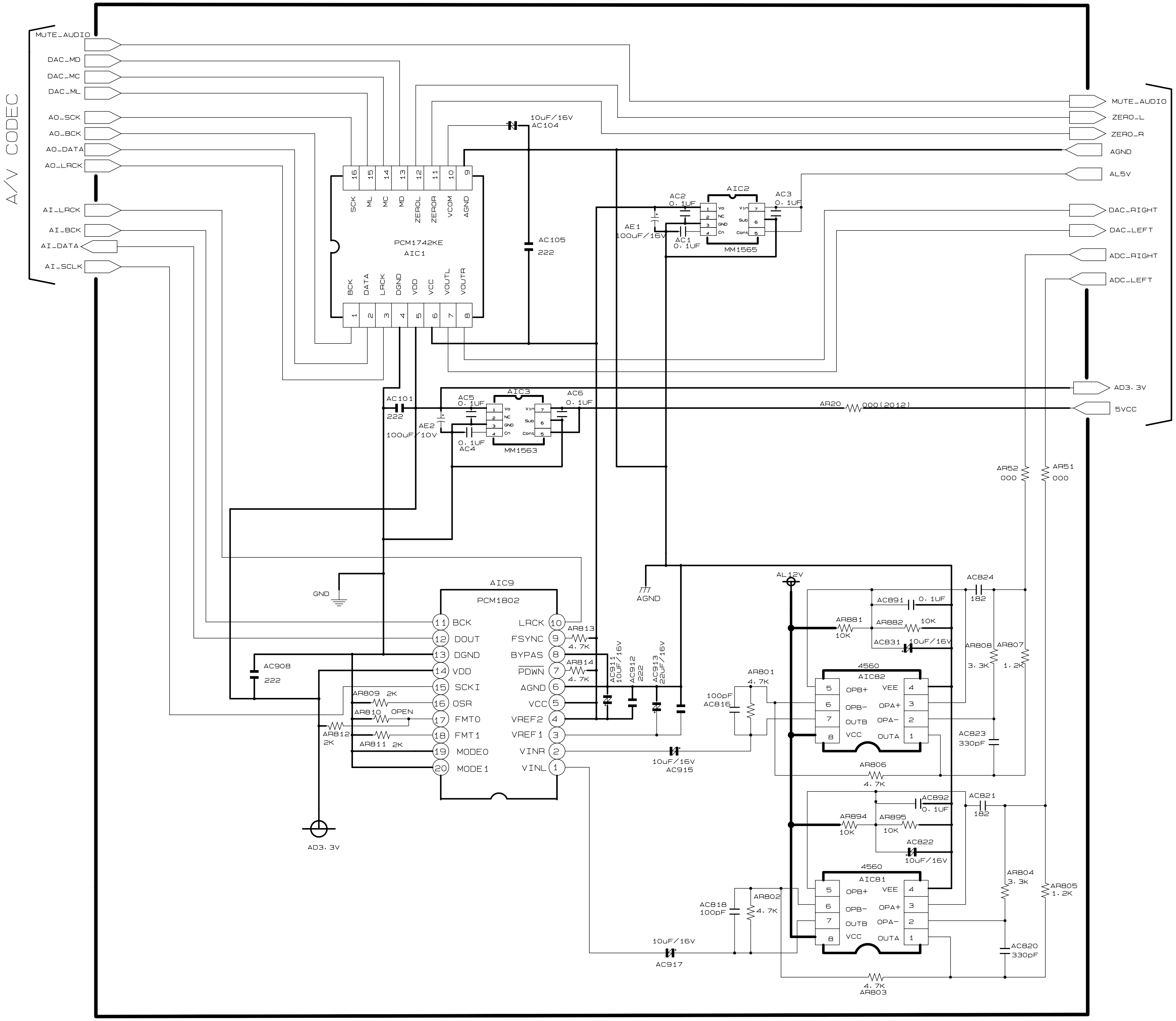
15-9 Video Decoder (DVD Main PCB)


MAIN CONNECTOR
A/V CODEC
FLASH & SRAM
FLASH & SRAM
FLASH & SRAM
TIC1
TVP5146
MM1561
TIC2
TC91
0.1UF
TC92
0.1UF
TC90
0.1UF
TE5
10uF/16V
AD3.3V
TL9
000(3216)
TL8
000(3216)
TL7
000(3216)
V1.8V
V1.8V
Cb/B_IN
TC80
0.1UF(2012)
TR180
OPEN
TE2
10uF/16V
Y/G_IN
TC7
0.1UF(2012)
TR107
OPEN
Cr/R_IN
TC16
0.1UF(2012)
TR116
OPEN
Y_IN
TC9
0.1UF(2012)
TR109
OPEN
C_IN
TC18
0.1UF(2012)
TR118
OPEN
CVBS_IN
TC23
0.1UF(2012)
TR123
OPEN
TR281
OPEN
TR291
OPEN
AGND
GND
SCL
SDA
/RSTAV
TE4
TE3
TR71
OPEN
TC67
0.1UF
TC61
0.1UF
TC78
0.1UF
TC76
0.1UF
TC75
0.033NF
TC74
0.033NF
TR711
4.7K
TR72
4.7K
TR70
2.2K
TR69
4.7KR
TNR66
TX1
14.31818MHz
TR74
100K
TR73
100
VI_VSYNC
1 VI_1_B
2 VI_1_C
3 CH1_A33GND
4 CH1_A33VDD
5 CH2_A33VDD
6 CH2_A33GND
7 VI_2_A
8 VI_2_B
9 VI_2_C
10 CH2_A18GND
11 CH2_A18VDD
12 A18VDD_REF
13 A18GND_REF
14 CH3_A18VDD
15 CH3_A18GND
16 VI_3_A
17 VI_3_B
18 VI_3_C
19 CH3_A33GND
20 CH3_A33VDD
21 CH4_A33VDD
22 CH4_A33GND
23 VI_4_A
24 CH4_A18GND
25 CH4_A18VDD
26 AGND
27 DGND
28 SCL
29 SDA
30 INTREQ
31 DVDD
32 DGND
33 PWDN
34 RESETB
35 FSS/GPIO
36 AVID/GPIO
37 GLCO/I2CA
38 IOVDD
39 IOGND
40 DATACLK
41 DVDD
42 DGND
43 Y_9
44 Y_8
45 Y_7
46 Y_6
47 Y_5
48 IOVDD
49 IOGND
50 Y_4
51 Y_3
52 Y_2
53 Y_1
54 Y_0
55 DVDD
56 DGND
57 C_9/GPIO/FSO
58 C_8/GPIO/BLUE
59 C_7/GPIO/GREEN
60 C_6/GPIO/RED
61 IOVDD
62 IOGND
63 C_5/GPIO
64 C_4/GPIO
65 C_3/GPIO
66 C_2/GPIO
67 DVDD
68 DGND
69 C_1/GPIO
70 C_0/GPIO
71 FID/GPIO
72 HS/CS/GPIO
73 VS/VBLK/GPIO
74 XTAL1
75 XTAL2
76 PLL_A18VDD
77 PLL_A18GND
78 CH1_A18VDD
79 CH1_A18GND
80 VI_1_A
TC1 0.1UF
TC2 0.1UF
TC4 0.1UF
TC5 0.1UF
TC8 0.1UF
TC11 0.1UF
TC12 0.1UF
TC14 0.1UF
TC17 0.1UF
TC20 0.1UF
TNR60 4.7KR
TC55
0.1UF
TNR54 33R
TNR50 33R
TC48
0.1UF
TC41
0.1UF
TR44 33
TR43 33
TR40 33
VI_D[0]
VI_D[1]
VI_D[2]
VI_D[3]
VI_D[4]
VI_D[5]
VI_D[6]
VI_D[7]
VI_D[8]
VI_D[9]
VI_CLK
TR35 100
FSS_GP
TC21
0.1UF
TC25
0.1UF
TR28 000
TR29 000
TR30 4.7K
TC31 0.1UF
TR33 000
TC34
0.1UF
TR34
100
TR36
4.7K
TR37
4.7K
TC38
0.1UF

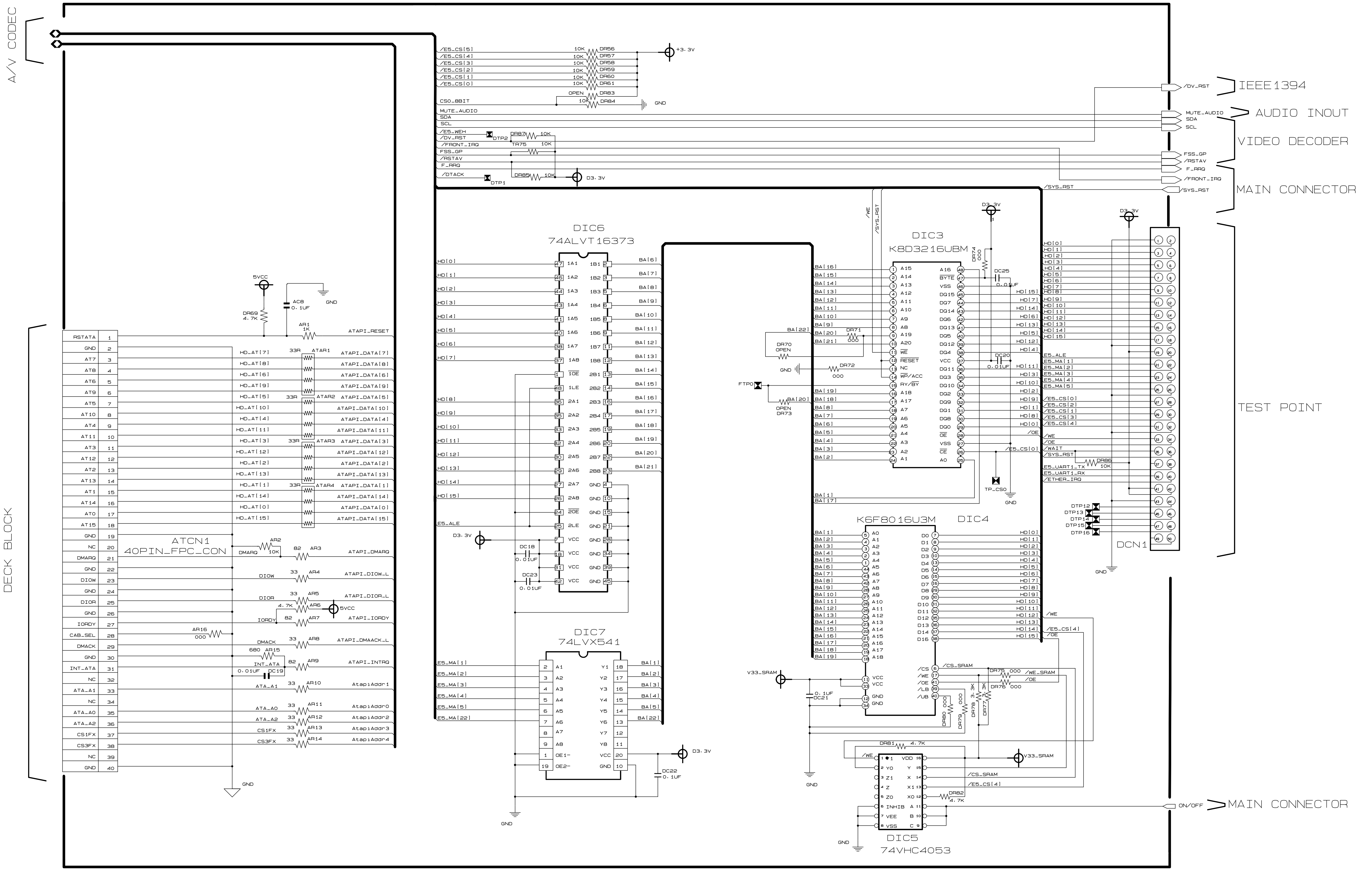
15-10 A/V Codec (DVD Main PCB)


DDR BLOCK
MAIN CONNECTOR
FLASH & SRAM
MAIN CONNECTOR
AUDIO INOUT
VIDEO DECODER
AUDIO INOUT
MAIN CONNECTOR
IEEE1394 BLOCK
MAIN CONNECTOR
FLASH & SRAM
DIC1
DMN8602
DIC8
24C040
U34
DAN217
AO_IEC958
AO_DATA
AO_BCK
AO_LRCK
DAC_ML
AO_SCK
AI_DATA
PI_SEL2
AI_BCK
AI_LRCK
DAC_MD
AI_SCLK
VI_D[0]
VI_D[1]
VI_D[2]
VI_D[3]
VI_D[4]
VI_D[5]
VI_D[6]
VI_D[7]
VI_D[8]
VI_D[9]
VI_VSYNC
VI_CLK
DAC_MC
DAC0
DAC1
DAC2
DAC3
DAC4
DAC5
V1.8V
BIO_PHY_DATA7
BIO_PHY_DATA6
BIO_PHY_DATA5
BIO_PHY_DATA4
BIO_PHY_DATA3
BIO_PHY_DATA2
BIO_PHY_DATA1
BIO_PHY_DATA0
BIO_PHY_CTL1
BIO_PHY_CTL0
BIO_LREQ
BIO_LPS
BIO_LINK_ON
BIO_PHY_CLK
+3.3VA
USB_VDD
E5_AVDD0
+3.3V
E5_VPAD
SSTL2_VDD
E5_VCORE
D3.3V
E5_UART1_TX
E5_UART1_RX
SDA
SCL
MUTE_AUDIO
E5_ALE
/SYS_RST
CS0_8BIT
/OE
/E5_WEH
/DV_RST
/FRONT_IRQ
/ETHER_IRQ
FSS_GP
/RSTAV
F_RRQ
/WE
/WAIT
/DTACK
/E5_CS[5]
/E5_CS[4]
/E5_CS[3]
/E5_CS[2]
/E5_CS[1]
/E5_CS[0]
E5_MA[22]
E5_MA[5]
E5_MA[4]
E5_MA[3]
E5_MA[2]
E5_MA[1]
HD[15]
HD[14]
HD[13]
HD[12]
HD[11]
HD[10]
HD[9]
HD[8]
HD[7]
HD[6]
HD[5]
HD[4]
HD[3]
HD[2]
HD[1]
HD[0]
AtapiAddr0
AtapiAddr1
AtapiAddr2
AtapiAddr3
AtapiAddr4
ATAPI_DATA[15]
ATAPI_DATA[14]
ATAPI_DATA[13]
ATAPI_DATA[12]
ATAPI_DATA[11]
ATAPI_DATA[10]
ATAPI_DATA[9]
ATAPI_DATA[8]
ATAPI_DATA[7]
ATAPI_DATA[6]
ATAPI_DATA[5]
ATAPI_DATA[4]
ATAPI_DATA[3]
ATAPI_DATA[2]
ATAPI_DATA[1]
ATAPI_DATA[0]
ATAPI_RESET
ATAPI_DMAACK_L
ATAPI_DMARQ
ATAPI_IORDY
ATAPI_INTRQ
ATAPI_DIOR_L
ATAPI_DIOW_L
DE6
330UF/6.3V
DC17
DC16
DC15
DC14
0.1UF
DE4
330UF/6.3V
DE3
22UF/6.3V
DC13
DC12
DC11
DC10
DC9
DC8
DC7
DE2
10UF/16V
DE1
10UF/16V
DC6
DC5
DC4
DC3
DC2
DC24
GND
AGND

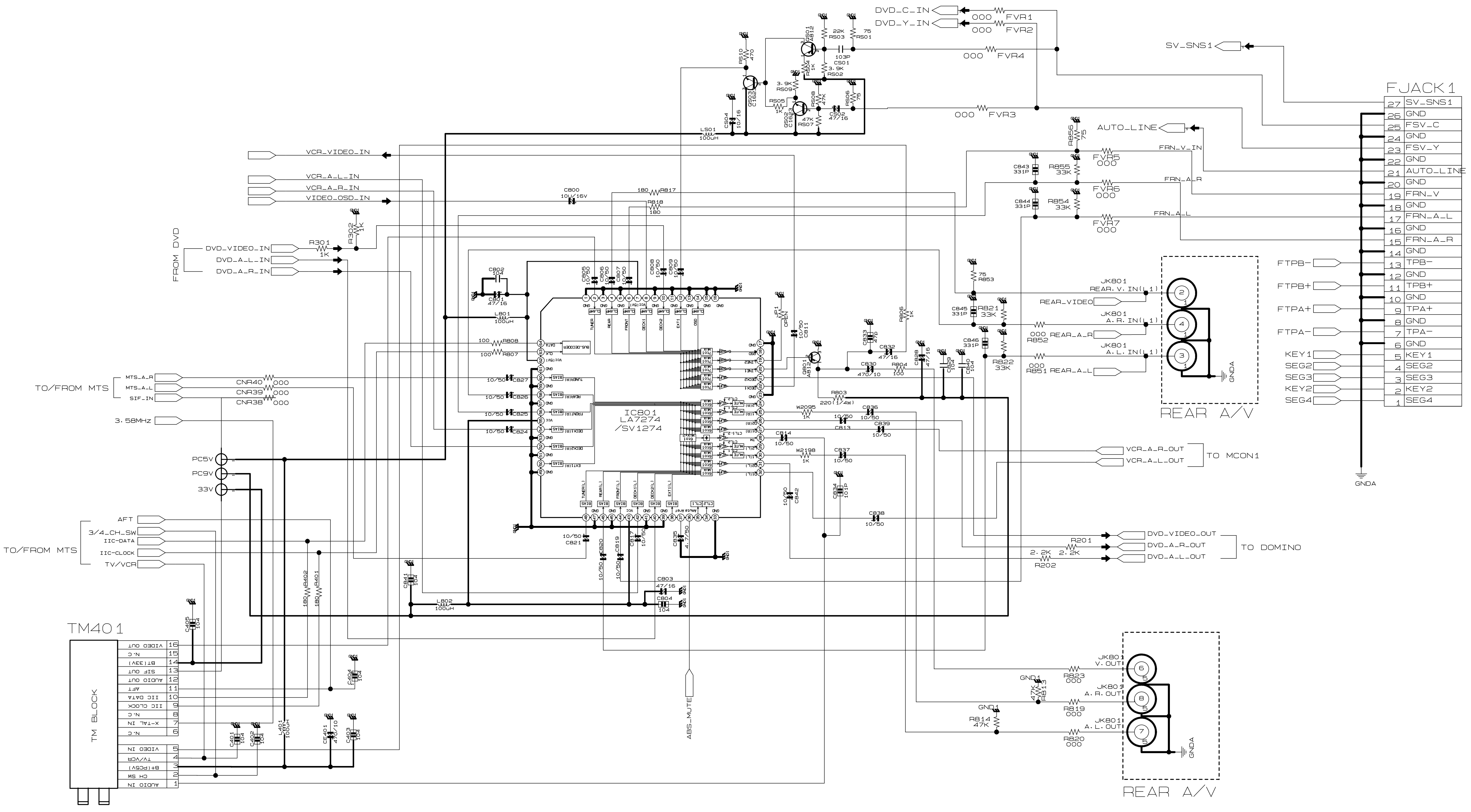
15-11 Audio In/Out (DVD Main PCB)


A/V CODEC
MUTE_AUDIO
DAC_MD
DAC_MC
DAC_ML
AO_SCK
AO_BCK
AO_DATA
AO_LRCK
AI_LRCK
AI_BCK
AI_DATA
AI_SCLK
PCM1742KE
AIC1
SCK
ML
MC
MD
ZEROL
ZEROR
VCOM
AGND
BCK
DATA
LRCK
DGND
VDD
VCC
VOUTL
VOUTR
10uF/16V
AC104
AC105
222
AIC2
MM1565
AC2
0.1UF
AC3
0.1UF
AE1
100uF/16V
AC1
0.1UF
AIC3
MM1563
AC5
0.1UF
AC6
0.1UF
AC101
222
AE2
100uF/10V
AC4
0.1UF
AR20
000(2012)
MAIN CONNECTOR
MUTE_AUDIO
ZERO_L
ZERO_R
AGND
AL5V
DAC_RIGHT
DAC_LEFT
ADC_RIGHT
ADC_LEFT
AD3.3V
5VCC
AR52
000
AR51
000
GND
AIC9
PCM1802
BCK
DOUT
DGND
VDD
SCKI
OSR
FMT0
FMT1
MODE0
MODE1
LRCK
FSYNC
BYPAS
PDWN
AGND
VCC
VREF2
VREF1
VINR
VINL
AR813
4.7K
AR814
4.7K
AC908
222
AR809 2K
AR810 OPEN
AR812
2K
AR811 2K
AD3.3V
AC911
10uF/16V
AC912
222
AC913
22uF/16V
AGND
10uF/16V
AC915
10uF/16V
AC917
AL12V
AC824
182
AC891
0.1UF
AR881
10K
AR882
10K
AC831
10uF/16V
AR808
3.3K
AR807
1.2K
AR801
4.7K
100pF
AC816
4560
AIC82
OPB+
OPB-
OUTB
VCC
VEE
OPA+
OPA-
OUTA
AC823
330pF
AR806
4.7K
AC892
0.1UF
AC821
182
AR894
10K
AR895
10K
AC822
10uF/16V
4560
AIC81
AR804
3.3K
AR805
1.2K
AC818
100pF
AR802
4.7K
AC820
330pF
4.7K
AR803

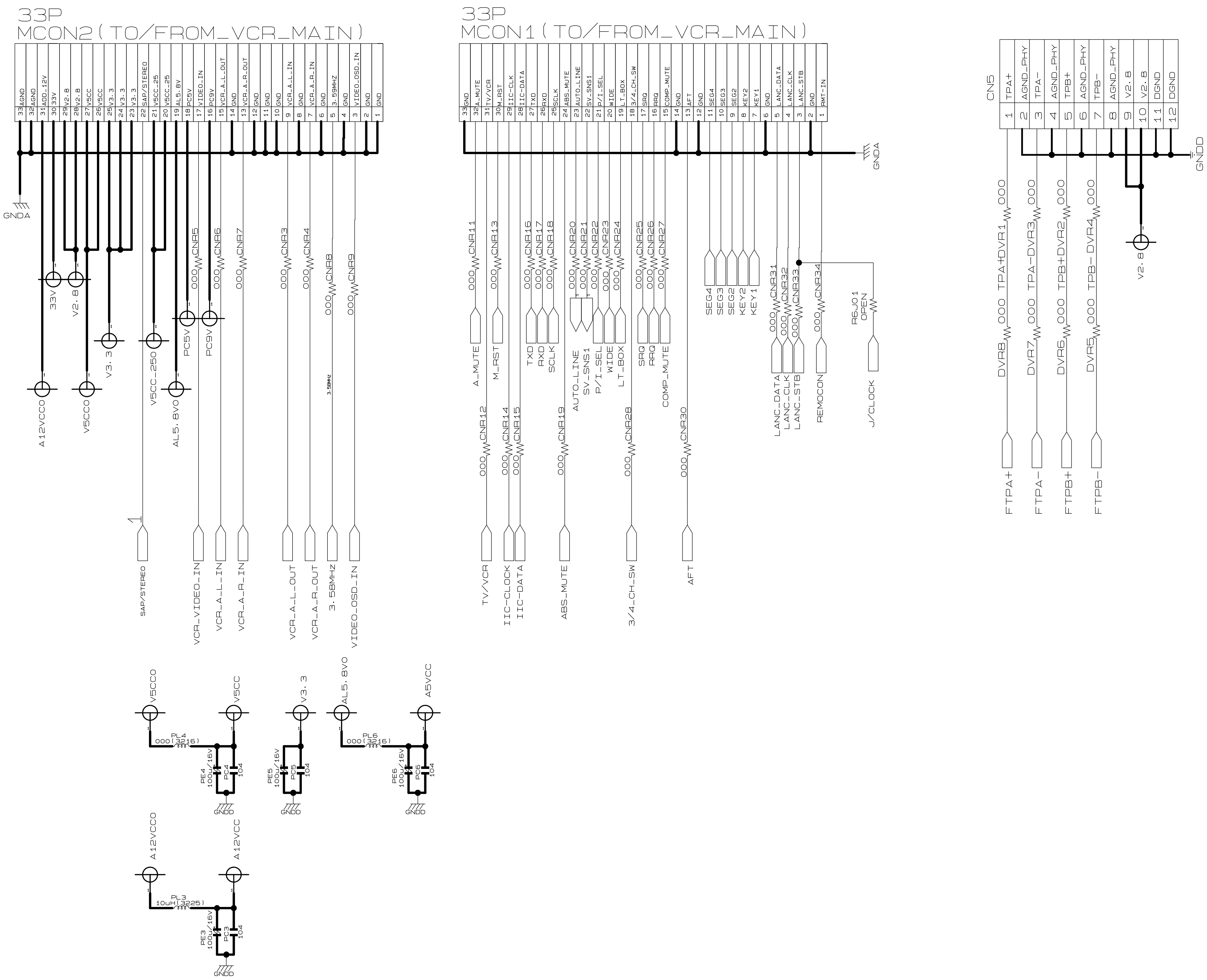
15-12 FLASH & SRAM (DVD Main PCB)


A/V CODEC
DECK BLOCK
ATCN1
40PIN_FPC_CON
DIC6
74ALVT16373
DIC7
74LVX541
DIC3
K8D3216UBM
K6F8016U3M
DIC4
DIC5
74VHC4053
DCN1
IEEE1394
AUDIO INOUT
VIDEO DECODER
MAIN CONNECTOR
TEST POINT
MAIN CONNECTOR
+3.3V
D3.3V
5VCC
V33_SRAM
GND
ON/OFF
/DV_RST
MUTE_AUDIO
SDA
SCL
FSS_GP
/RSTAV
F_RRQ
/FRONT_IRQ
/SYS_RST

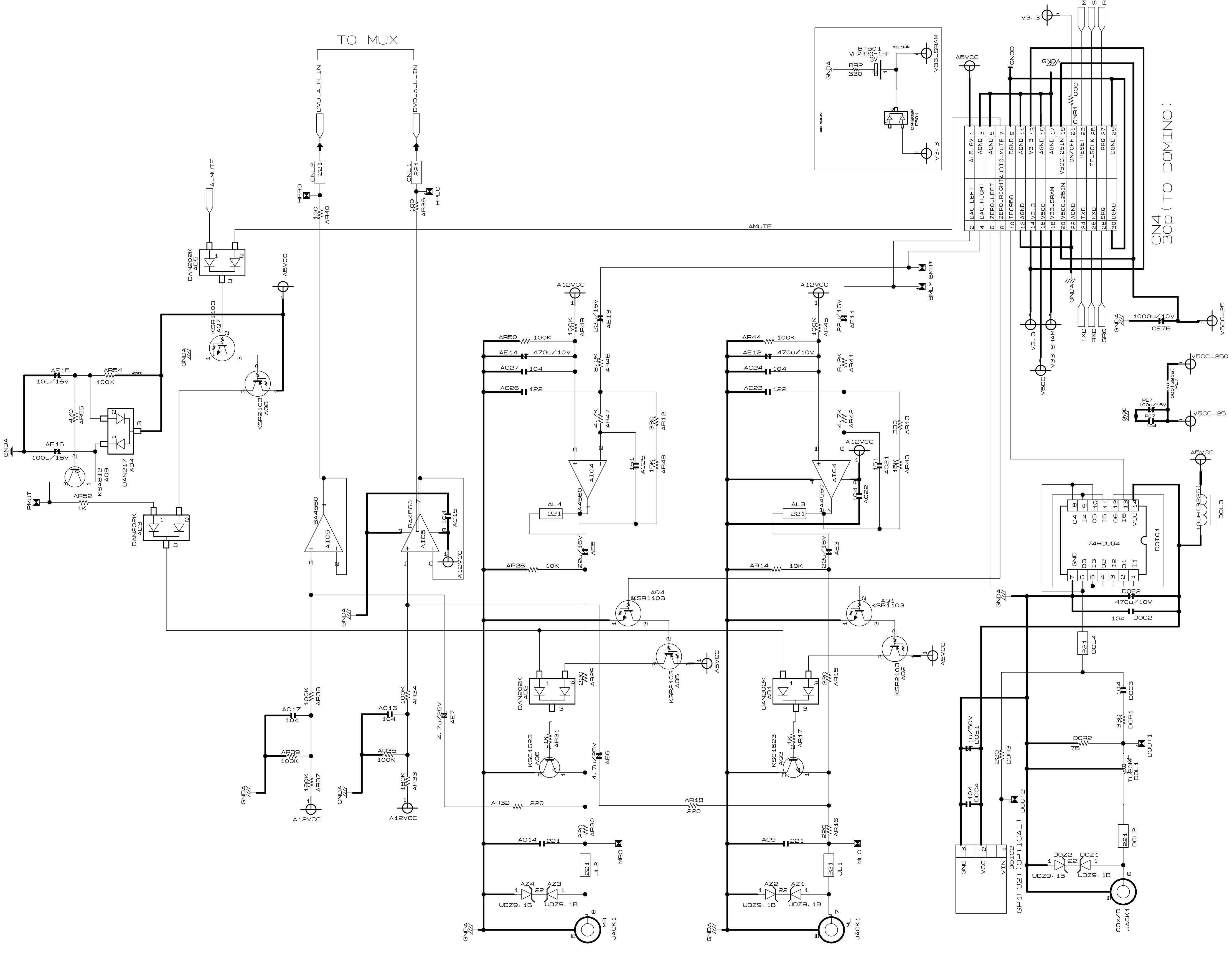
15-13 MUX & TM & A/V Input (Jack PCB)


DVD_C_IN
DVD_Y_IN
FVR1
FVR2
FVR4
FVR3
SV_SNS1
AUTO_LINE
FRN_V_IN
FRN_A_R
FRN_A_L
FVR5
FVR6
FVR7
R855 33K
R854 33K
C843 331P
C844 331P
R856 75
FJACK1
27 SV_SNS1
26 GND
25 FSV_C
24 GND
23 FSV_Y
22 GND
21 AUTO_LINE
20 GND
19 FRN_V
18 GND
17 FRN_A_L
16 GND
15 FRN_A_R
14 GND
13 TPB-
12 GND
11 TPB+
10 GND
9 TPA+
8 GND
7 TPA-
6 GND
5 KEY1
4 SEG2
3 SEG3
2 KEY2
1 SEG4
FTPB-
FTPB+
FTPA+
FTPA-
KEY1
SEG2
SEG3
KEY2
SEG4
GNDA
VCR_VIDEO_IN
VCR_A_L_IN
VCR_A_R_IN
VIDEO_OSD_IN
FROM DVD
DVD_VIDEO_IN
DVD_A_L_IN
DVD_A_R_IN
R301 1K
R302 1K
C800 10U/16V
R817 180
R818 180
Q501 A812
Q502 C1623
Q503 C1623
R510 470
R503 22K
R501 75
C501 103P
R502 3.9K
R504 1K
R509 3.9K
R505 1K
R508 47K
R507 47K
R506 75
C502 47/16
C504 10/16
L501 100uH
C802 104
C801 47/16
L801 100uH
R808 100
R807 100
C805
C806
C807
C808
C809
IC801
LA7274
/SV1274
MTS_A_R
MTS_A_L
SIF_IN
TO/FROM MTS
CNR40 000
CNR39 000
CNR38 000
3.58MHz
C827 10/50
C826 10/50
C825 10/50
C824 10/50
PC5V
PC9V
33V
AFT
3/4_CH_SW
IIC-DATA
IIC-CLOCK
TV/VCR
TO/FROM MTS
R402 180
R401 180
C841 104
L802 100uH
C821 10/50
C820 10/50
C819 10/50
C817 10/50
C835 4.7/50
C803 47/16
C804 104
ABS_MUTE
JP1 OPEN
C811 10/50
R806 1K
Q801 A812
C833 47P
C832 47/16
C830 470/10
R804 100
C828 47/16
C829 104
C840 104
R803 220(1/4W)
W2095 1K
C836 10/50
C813 10/50
C839 10/50
C814 10/50
W2198 1K
C837 10/50
C842 10/50
C834 101P
C838 10/50
R853 75
JK801
REAR.V.IN(L1)
REAR_VIDEO
A.R.IN(L1)
A.L.IN(L1)
C845 331P
R821 33K
C846 331P
R822 33K
R852 000
REAR_A_R
R851 000
REAR_A_L
GNDA
REAR A/V
VCR_A_R_OUT
VCR_A_L_OUT
TO MCON1
DVD_VIDEO_OUT
DVD_A_R_OUT
DVD_A_L_OUT
TO DOMINO
R201 2.2K
R202 2.2K
TM401
TM BLOCK
16 VIDEO OUT
15 N.C
14 BT(33V)
13 SIF OUT
12 AUDIO OUT
11 AFT
10 IIC DATA
9 IIC CLOCK
8 N.C
7 X-TAL IN
6 N.C
5 VIDEO IN
4 TV/VCR
3 B+(PC5V)
2 CH SW
1 AUDIO IN
C405 104
C404 104
C401 104
C402 104
L401 100uH
C400 470/10
C403 104
JK801
V.OUT
A.R.OUT
A.L.OUT
GND1
R823 000
R813 47K
R819 000
R814 47K
R820 000
GNDA
REAR A/V

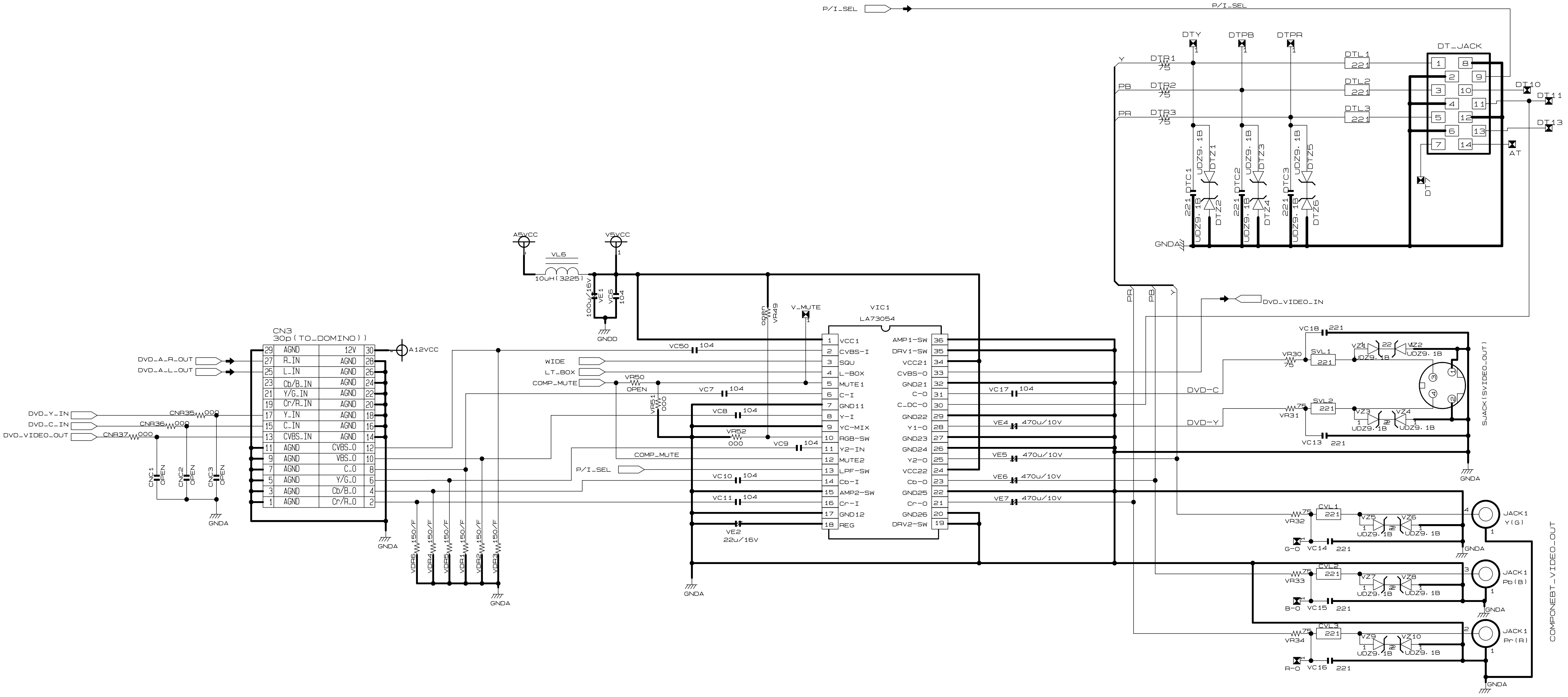
15-14 MUX Connector (Jack PCB)


33P
MCON2(TO/FROM_VCR_MAIN)
33 AGND
32 AGND
31 ADD_12V
30 33V
29 V2.8
28 V2.8
27 V5CC
26 V5CC
25 V3.3
24 V3.3
23 V3.3
22 SAP/STEREO
21 V5CC_25
20 V5CC_25
19 AL5.8V
18 PC5V
17 VIDEO_IN
16 PC9V
15 VCR_A_L_OUT
14 GND
13 VCR_A_R_OUT
12 GND
11 GND
10 GND
9 VCR_A_L_IN
8 GND
7 VCR_A_R_IN
6 GND
5 3.58MHZ
4 GND
3 VIDEO_OSD_IN
2 GND
1 GND
GNDA
33V
V2.8
V3.3
V5CC_25O
PC5V
PC9V
A12VCCO
V5CCO
AL5.8VO
CNR5
CNR6
CNR7
CNR3
CNR4
CNR8
CNR9
SAP/STEREO
VCR_VIDEO_IN
VCR_A_L_IN
VCR_A_R_IN
VCR_A_L_OUT
VCR_A_R_OUT
3.58MHz
VIDEO_OSD_IN
33P
MCON1(TO/FROM_VCR_MAIN)
33 GND
32 A_MUTE
31 TV/VCR
30 M_RST
29 IIC_CLK
28 IIC_DATA
27 TXD
26 RXD
25 SCLK
24 ABS_MUTE
23 AUTO_LINE
22 SV_SNS1
21 P/I_SEL
20 WIDE
19 LT_BOX
18 3/4_CH_SW
17 SRQ
16 RRQ
15 COMP_MUTE
14 GND
13 AFT
12 GND
11 SEG4
10 SEG3
9 SEG2
8 KEY2
7 KEY1
6 GND
5 LANC_DATA
4 LANC_CLK
3 LANC_STB
2 GND
1 RMT-IN
GNDA
CNR11
CNR13
CNR16
CNR17
CNR18
CNR20
CNR21
CNR22
CNR23
CNR24
CNR25
CNR26
CNR27
CNR31
CNR32
CNR33
CNR34
CNR12
CNR14
CNR15
CNR19
CNR28
CNR30
A_MUTE
M_RST
TXD
RXD
SCLK
AUTO_LINE
SV_SNS1
P/I_SEL
WIDE
LT_BOX
SRQ
RRQ
COMP_MUTE
SEG4
SEG3
SEG2
KEY2
KEY1
LANC_DATA
LANC_CLK
LANC_STB
REMOCON
R6J01
OPEN
J/CLOCK
TV/VCR
IIC-CLOCK
IIC-DATA
ABS_MUTE
3/4_CH_SW
AFT
CN5
1 TPA+
2 AGND_PHY
3 TPA-
4 AGND_PHY
5 TPB+
6 AGND_PHY
7 TPB-
8 AGND_PHY
9 V2.8
10 V2.8
11 DGND
12 DGND
GNDD
V2.8
TPA+DVR1 000
TPA-DVR3 000
TPB+DVR2 000
TPB- DVR4 000
DVR8 000
DVR7 000
DVR6 000
DVR5 000
FTPA+
FTPA-
FTPB+
FTPB-
V5CCO
V5CC
PL4
000(3216)
PE4
100u/16V
PC4
104
GNDD
V3.3
PE5
100u/16V
PC5
104
GNDD
AL5.8VO
A5VCC
PL6
000(3216)
PE6
100u/16V
PC6
104
GNDD
A12VCCO
A12VCC
PL3
10uH(3225)
PE3
100u/16V
PC3
104
GNDD

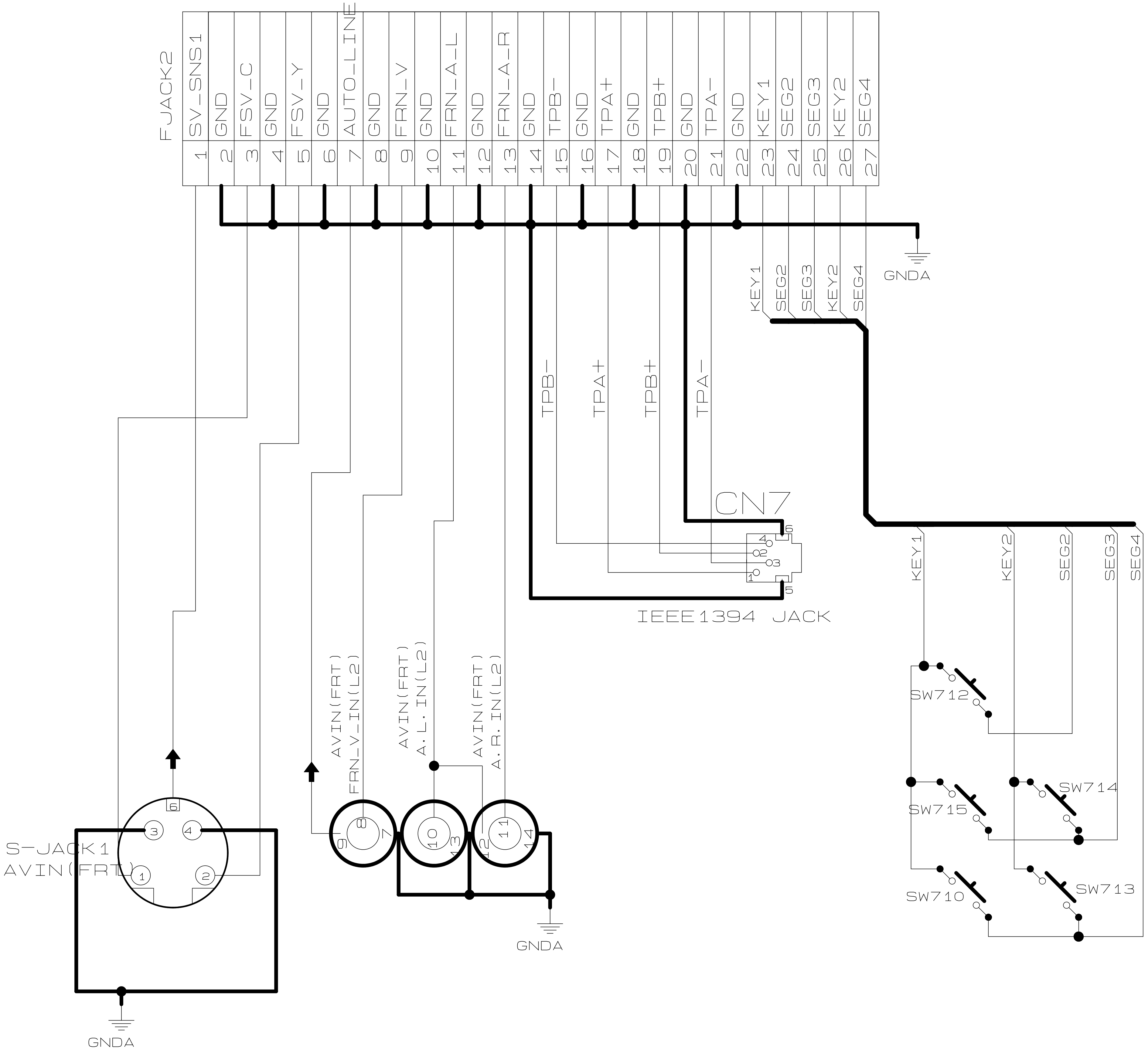
15-15 Audio Out (Jack PCB)


TO MUX
DVD_A_R_IN
DVD_A_L_IN
A_MUTE
AMUTE
CN4
30P(TO_DOMINO)
BT501
VL2330-1HF
V33_SRAM
V3.3
A5VCC
A12VCC
GNDA
GNDD
V5CC_25
V5CC_250
CE76
1000u/10V
BA4560
AIC4
AIC5
AIC6
KSR1103
KSR2103
KSC1623
KSA812
DAN202K
DAN217
74HCU04
DOIC1
DOIC2
GP1F32T(OPTICAL)
JACK1
MR
ML
COX/D
UDZ9.1B
PMUT
HPRO
HPLO
MRO
MLO
BML*
BMR*
TXD
RXD
SRQ
M_RST
SCLK
RRQ
DOUT1
DOUT2
DOL3
10uH(3225)
470u/10V
22u/16V
4.7u/25V
10u/16V
100u/16V

15-16 Video Out (Jack PCB)


P/I_SEL
DTY
DTPB
DTPR
DTR1
DTR2
DTR3
DTL1
DTL2
DTL3
DT_JACK
DT10
DT11
DT13
AT
DT7
DTC1
DTC2
DTC3
DTZ1
DTZ2
DTZ3
DTZ4
DTZ5
DTZ6
UDZ9.1B
GNDA
A5VCC
V5VCC
VL6
10uH(3225)
100u/16V
VE1
VC6
104
GNDD
VR49
V_MUTE
VIC1
LA73054
VCC1
CVBS-I
SQU
L-BOX
MUTE1
C-I
GND11
Y-I
YC-MIX
RGB-SW
Y2-IN
MUTE2
LPF-SW
Cb-I
AMP2-SW
Cr-I
GND12
REG
AMP1-SW
DRV1-SW
VCC21
CVBS-O
GND21
C-O
C_DC-O
GND22
Y1-O
GND23
GND24
Y2-O
VCC22
Cb-O
GND25
Cr-O
GND26
DRV2-SW
VC50
VC7
VC8
VR52
VC9
VC10
VC11
VE2
22u/16V
VC17
VE4
VE5
VE6
VE7
470u/10V
CN3
30p(TO_DOMINO)
A12VCC
DVD_A_R_OUT
DVD_A_L_OUT
DVD_Y_IN
DVD_C_IN
DVD_VIDEO_OUT
CNR35
CNR36
CNR37
CNC1
CNC2
CNC3
OPEN
WIDE
LT_BOX
COMP_MUTE
VR50
VR51
VDR1
VDR2
VDR3
VDR4
VDR5
VDR6
150/F
DVD_VIDEO_IN
DVD-C
DVD-Y
VC18
VR30
SVL1
SVL2
VR31
VC13
VZ1
VZ2
VZ3
VZ4
SJACK(SVIDEO_OUT)
JACK1
Y(G)
Pb(B)
Pr(R)
CVL1
CVL2
CVL3
VR32
VR33
VR34
VC14
VC15
VC16
G-O
B-O
R-O
VZ5
VZ6
VZ7
VZ8
VZ9
VZ10
COMPONEBT_VIDEO_OUT

15-17 Front/Key (Front PCB)


FJACK2
1 SV_SNS1
2 GND
3 FSV_C
4 GND
5 FSV_Y
6 GND
7 AUTO_LINE
8 GND
9 FRN_V
10 GND
11 FRN_A_L
12 GND
13 FRN_A_R
14 GND
15 TPB-
16 GND
17 TPA+
18 GND
19 TPB+
20 GND
21 TPA-
22 GND
23 KEY1
24 SEG2
25 SEG3
26 KEY2
27 SEG4
GNDA
KEY1
SEG2
SEG3
KEY2
SEG4
TPB-
TPA+
TPB+
TPA-
CN7
IEEE1394 JACK
KEY1
KEY2
SEG2
SEG3
SEG4
SW712
SW714
SW715
SW710
SW713
AVIN(FRT)
FRN_V_IN(L2)
AVIN(FRT)
A.L.IN(L2)
AVIN(FRT)
A.R.IN(L2)
S-JACK1
AVIN(FRT)
GNDA
GNDA

TOSHIBA CORPORATION
1 1, SHIBAURA 1 CHOME, MINATO KU, TOKYO 105 8001, JAPAN

TOSHIBA CORPORATION

1 1, SHIBAURA 1 CHOME, MINATO KU, TOKYO 105 8001, JAPAN